MONTANA STATE PLAN

FOR THE INSTITUTIONAL BUILDINGS GRANT PROGRAM

MONTANA DEPARTMENT OF NATURAL RESOURCES & CONSERVATION
ENERGY DIVISION
JUNE 1980
DNRC

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FOR THE

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by

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CONTENTS

ABBREVIATIONS

AC - air conditioning

Btus - British thermal units

CCF - one hundred cubic feet

CDD - cooling degree day

CFM - cubic feet per minute

DD - degree day

DOE - Department of Energy

DNRC - (Montana) Department of Natural Resources and Conservation

EA - energy audit

EC - energy consumption

ECM - energy conservation measure

F - Fahrenheit

HDD - heating degree day

HP - horse power

HVAC - heating ventilation air conditioning

HV - heating ventilation

IBGP - Institutional Buildings Grant Program

KWH - kilowatt hours

KW - kilowatt

LPG - liquid petroleum gas (propane)

O&M - operational and maintenance

PEA - preliminary energy audit

R - rural

R-value- the reciprocal of thermal conductance

TA - technical assistance

U - urban

U-value- coefficient of heat transmission

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STATE OF MONTANA

STATE PLAN

FOR GRANT PROGRAMS FOR SCHOOLS AND HOSPITALS AND FOR BUILDINGS OWNED BY UNITS OF LOCAL GOVERNMENT AND PUBLIC CARE INSTITUTIONS: TECHNICAL ASSISTANCE AND ENERGY CONSERVATION MEASURES

The State of Montana, Department of Natural Resources and Conservation, Energy Division, submits this State Plan in order to participate in the continuation of the Department of Energy's grant program to reduce energy consumption and associated costs in schools, hospitals, and buildings owned by units of local government and public care institutions. The Plan centers on a description of Phase II: Technical Assistance Programs and Energy Conservation Measures.

I. DEFINITION OF PROGRAM OBJECTIVES

The Department of Energy has created, through the authority of the National Energy Conservation Policy Act, cost-sharing grant programs to reduce the energy use and anticipated energy costs for (1) schools and hospitals, and (2) buildings owned by units of local government and public care institutions. These objectives will be achieved by providing financial assistance to: (a) conduct technical assistance programs to identify and evaluate attainable energy conservation objectives; and (b) help schools and hospitals acquire and install energy conservation measures, including solar and other renewable resource measures. This is the second and final portion of the program.

The first portion of the program continues to provide financial assistance for the conduct of preliminary energy audits and energy audits for schools

(Appendix B), hospitals, units of local government and public care institutions. The State of Montana submitted an application for funding of the first portion, or Phase I, on May 2, 1979.

Identification of Eligible Institutions

The eligibility criteria for institutions has been adopted without modification from the Federal regulations (Appendix F):

(455.41)

To be eligible to receive financial assistance for a technical assistance program, an applicant must --

a) Be a school, hospital, unit of local government or public care institution, all as defined in 455.2, or a coordinating agency representing a group of eligible institutions and which has been granted authority by the institutions to act in their behalf;

b) Be located in a State which has an approved State Plan . . .;

c) Have conducted an energy audit or its equivalent, as determined by the State in accordance with the State Plan, for the building for which financial assistance is to be requested, subsequent to the most recent construction, reconfiguration or utilization change which significantly modified energy use within the building;

d) Give assurance that it has implemented all energy conservation maintenance and operating procedures identified as a result of the energy audit, or provide a satisfactory written justification for not implementing any specific maintenance and operating procedures so identified; and

e) Submit an application in accordance with the provisions of this part and the approved State Plan.

(455.51)

a) To be eligible to receive financial assistance for an energy conservation measure, including solar or other renewable resource measure, an applicant must --

1) Be a school or hospital, or both, as defined in Section 455.2, or a coordinating agency which represents groups of eligible institutions and which has been granted authority by the institutions to act in their behalf;

2) Be located in a State which has an approved State Plan;

3) Have completed a technical assistance program or its equivalent, as determined by the State in accordance with the State Plan, for the building for which financial assistance is to be requested, subsequent to the most recent construction, reconfiguration or utilization change to the building which significantly modified energy use within the building;

4) Have implemented all energy conservation maintenance and operating procedures which are identified as the result of an energy audit and a technical assistance program, or have provided a satisfactory written justification for not implementing any specific maintenance and operating procedures so identified;

5) Have no plan or intention at the time of application to close or otherwise dispose of the building for which financial assistance is to be requested within the simple payback period of any energy conservation measure recommended for that building; and

6) Submit an application in accordance with the provisions of this part and the approved State Plan.

b) To be eligible for financial assistance, the simple payback period of each energy conservation measure for which financial assistance is requested shall not be less than 1 year nor greater than 15 years, and the estimated useful life of the measure shall be greater than its simple payback period.

Identification of eligible institutions was made, using these criteria, by an Advisory Group of coordinating agencies and organizations during Phase I of the program. The mailing list that was produced by the Advisory Group shall be maintained for the second phase as well.

The numbers of eligible and participating institutions in each category are shown in the following table:

Institution	No. Elig. Inst.	No. Elig. Bldgs.	No. Elig. Bldgs. w/compl. PEA's	% of Elig. Bldgs. to compl. PEA's
Schools	802	1000	221	22.1
Hospitals	60	63	26	41.2
Local Gov't.	189	600	30	5.0
Pub. Care Inst.	150	150	9	6.0
GRAND TOTAL	1201	1813	286	

Results of Preliminary Energy Audits

By August 1, 1979, a total of 286 buildings had returned the Preliminary Energy Audit (PEA) form mailed to them May 14. From the PEA's, the State of Montana has found that:

0 energy audits or their equivalent have been completed;*

3 technical assistance (TA) analyses or their equivalent have been completed;** and

260 energy conservation measures (ECM) have been completed.***

(See Appendix A for more comphrehensive breakdown.)

(*113 buildings have conducted some form of audit, but none meets all the requirements of an energy audit.)
(**4 buildings have conducted TA's, but failed to investigate renewable resources.)
(***See Appendix A for a description of ECM's.)

From the information, it is estimated that 1000-2000 energy audits are yet to be done. Although it is impossible to determine accurately the number of TA's and ECM's that will be performed, initial interest seems to indicate that roughly 30-40% of those buildings that complete an energy audit, or 545 buildings, will request TA's; and that 25% of the schools and hospitals that complete energy audits, or 266 buildings, will request ECM's. These figures should only be considered as rough estimates.

The savings that will result from implementation of all recommended Operating and Maintenance (O&M) procedures are equally difficult to assess. However, the State estimates that, considering the number of participating institutions and their efforts to reduce energy consumption prior to this grant program, the approximately 500 buildings expected to participate in Phase II will save about 10-20% of their annual energy needs as a result of O&M changes (see Appendix A).

II. DESCRIPTION OF PROGRAM

Technical Assistance Program

A technical assistance program, as described in the program regulations 455.42, shall be a program that is (Appendix F):

(455.42)

a) Conducted by a qualified technical assistance analyst, who shall consider all possible energy conservation measures for a building, including solar or other renewable resource measures. A technical assistance program shall include a detailed engineering analysis to identify the estimated cost of, and the energy and cost savings likely to be realized from, implementing each identified energy conservation maintenance and operating procedure. A technical assistance program shall also

identify the estimated cost of, and the energy and cost savings likely to be realized from acquiring and installing each energy conservation measure, including solar and other renewable resource measures, that indicate a significant potential for saving energy based upon the technical assistance analyst's initial consideration.

b) At the conclusion of a technical assistance program, the technical assistance analyst shall prepare a final report which shall include --

1) A description of building characteristics and energy data including --

(a) The results of the preliminary energy audit and energy audit (or its equivalent) of the building;

(b) The operating characteristics of energy using systems; and

(c) The estimated remaining useful life of the buildings;

2) An analysis of the estimated energy consumption of the building, by fuel type (in total BTU's and BTU/sq. ft/yr.), at optimum efficiency (assuming implementation of all energy conservation maintenance and operating procedures);

3) An evaluation of the building's potential for solar conversion, particularly for water heating systems;

4) A listing of any known local zoning ordinances and building codes which may restrict the installation of solar systems;

5) A description and analysis of all recommendations, if any, for acquisition and installation of energy conservation measures, including solar and other renewable resource measures, setting forth --

(a) A description of each recommended energy conservation measure;

(b) An estimate of the cost of design, acquisition and installation of each energy conservation measure;

(c) An estimate of the useful life of each energy conservation measure;

(d) An estimate of increases or decreases in maintenance and operating costs that would result from each energy conservation measure, if any;

(e) An estimate of the salvage value or disposal cost of each energy conservation measure at the end of its useful life, if any;

(f) An estimate of the annual energy and energy cost savings (using current energy prices) expected from the acquisition and installation of each energy conservation measure. In calculating the potential energy cost savings of each recommended energy conservation measure, including solar or other renewable resource measure, technical assistance analysts shall --

(A) Assume that all energy savings obtained from energy conservation maintenance and operating procedures have been realized;

(B) Calculate the total energy and energy cost savings, by fuel type, expected to result from the acquisition and installation of all recommended energy conservation measures, taking into account the interaction among the various measures; and,

(C) Calculate that portion of the total energy and energy cost savings, as determined in (B) above, attributable to each individual energy conservation measure.

g) The simple payback period of each recommended energy conservation measure, taking into account the interactions among the various measures. The simple payback period is calculated by dividing

the estimated total cost of the measure, as determined pursuant to section 455.42 b) 5) (b), by the estimated annual cost saving accruing from the measure, as determined pursuant to section 455.42 b) 5) (f). For the purposes of ranking applications, the simple payback period shall be calculated using the cost savings resulting from energy savings only, determined on the basis of current energy prices. The estimated cost of the measure shall be the total cost for design and other professional services (excluding costs of a technical assistance program), if any, and acquisition and installation costs. Other economic analyses, such as life-cycle costing, which consider all costs and cost savings, such as maintenance costs and/or savings, resulting from an energy conservation measure, are recommended, but not required, for use by the institution in its decision-making process;

6) A listing of energy use and cost data for each fuel type used for the prior 12-month period; and

7) A signed and dated certification that the technical assistance program has been conducted in accordance with the requirements of this section and the grant application and that the data presented are accurate to the best of the technical assistance analyst's knowledge.

(455.81)

a) The Secretary may make grants to units of local governments, public care institutions and coordinating agencies for up to 50 percent of the costs of performing technical assistance programs for buildings covered by an (approved) application. . .

b) No grant awarded under this section for a technical assistance program shall include funding for the purchase of any single item of equipment or personal property having an acquisition cost in excess of $500.

(455.82)

a) The Secretary may make grants to schools, hospitals, and coordinating agencies for up to 50 percent of the cost of performing technical assistance programs for buildings covered by an (approved) application. . .

Energy Conservation Measures Program

The energy conservation measures programs, as described in the regulations 455.52 (Appendix F):

(455.52)

. . . will be for the design, acquisition and installation of energy conservation measures to reduce energy consumption or measures to allow the use of solar or other alternative energy resources for schools and hospitals. Such measures include, but are not necessarily limited to --

a) Insulation, which resists heat transfer from the mechanical systems to the surrounding space, for bare pipes, water heaters, hot water storage tanks, chilled water piping, ductwork and other uninsulated mechanical equipment carrying an above or below ambient temperature fluid;

b) Roof insulation, which resists heat transfer through the roof;

c) Ceiling insulation, installed either above or below the ceiling, which resists heat transfer through the ceiling;

d) Wall insulation, which resists heat transfer through the wall;

e) Floor insulation, which resists heat transfer through the floor;

f) Storm windows, which are an additional window, normally installed to the exterior, but which may be installed to the interior of the primary or ordinary window, to increase resistance to heat transfer, and to decrease air infiltration through the window assembly;

g) Storm doors, which are an extra door installed to the exterior of an exterior door, but also may be installed as part of the entrance vestibule, to decrease heat transfer and air infiltration through the building entrance ways;

h) Multiglazed window or door systems, which are a single glass unit consisting of multiple layers of glass separated by a hermetically sealed air space, which provide greater resistance to heat transfer;

i) Reduction in glass area (in other than south-facing glazing systems) through use of methods such as bricking and insulated paneling, which decreases heat transfer and air infiltration;

j) Heat absorbing or heat reflective glazed and coated window and door systems, which are specifically treated, coated or laminated glazing systems to absorb or reflect solar heat;

k) Caulking, which is placed in joints of buildings or window or door systems to prevent the passage of air and moisture through the building envelope;

l) Weatherstripping, which consists of strips of flexible material placed over, under, or in movable joints of windows and doors to reduce the passage of air and moisture;

m) Automatic energy control systems; such as mixed air temperature reset devices; cooling coil discharge temperature reset devices; hot deck temperature reset devices; economizer controls; enthalpy controls; night setback thermostats; time clocks to start/stop selected heating, ventilating, and air conditioning systems, refrigeration equip-

ment, hot water generators, and associated pumps and fans; thermostatic radiator valves, and central computer control systems, which adjust the supply of heating, cooling and ventilating to meet space conditioning requirements;

n) Equipment required to operate or convert to variable energy supply, including --

1) Automatic ventilating systems to turn off or vary the consumption of energy systems to deliver no more energy than required at any operating point;

2) Constant volume air distribution systems altered to variable air flow systems by the addition of variable air flow boxes, fan volume control dampers and related climatic controls; or

3) Water spray coils for adiabatic cooling during appropriate weather conditions;

o) Assessing solar systems, such as direct gain glazing systems, mass (trombe) wall systems, thermal pond systems, and thermosyphon systems, which utilize elements of the building to collect, store and distribute solar energy for heating and/or cooling, and in which heat flow is by natural means (conduction, convection, radiation, or evaporation);

p) Solar space heating or cooling systems, which consist of solar collectors, and associated thermal storage (short term & annual), heat exchangers, pumps, fans, controls, piping and ducting;

q) Solar electric generating systems, which consist of photovoltaic solar collectors and associated electric storage and controls, or concentrating solar collectors and generating equipment, or wind energy conversion systems;

r) Solar domestic hot water heating systems, which consist of solar collectors, and associated thermal storage, heat exchangers,

pumps, controls and piping, for systems such as domestic hot water, laundry, kitchen, and boiler water makeup; geothermal space heating which consists of pumps, controls & piping (wind energy conversion non-electric systems for space heating);

s) Furnace or utility plant modifications, which consist of the installation of equipment to achieve reduction in fuel consumption, or to convert to renewable energy sources or coal, including --

1) Replacement burners, furnaces, boilers, or any combination thereof, which are designed to substantially reduce the amount of fuel consumed as a result of increased combustion efficiency;

2) Electrical or mechanical furnace ignition systems which eliminate continuous energy use;

3) Devices for modifying flue openings, such as dampers and heat exchangers, which increase the efficiency of the total heating systems;

4) Automatic combustion control systems, which improve burner operating performance to reduce consumption of fuel during full- and part-load operations;

5) Devices, such as turbulators and flow restrictors, for modifying the capacity of boilers or hot water units to reduce oversized equipment to a proper size (after the other building modifications) and to increase the full and partload efficiency of the primary equipment; and

6) Equipment required to convert oil-fired and gas-fired units to alternative energy sources, including coal;

t) Lighting fixtures modifications and associated rewiring, which reduce the watts per square foot required for illumination through use of such measures as lamp sources of higher efficiency, or use of non-

uniform task lighting design. Lighting fixture modifications that increase the general illumination level of a facility shall not be eligible for funding unless the increase is necessary to conform to any applicable State or local building code;

u) Energy recovery systems which reduce energy used in heating and coolings systems by --

1) Direct recycling of uncontaminated air, which has been conditioned, to an adjacent area for heating, cooling, or ventilation makeup air;

2) Exhaust air heat recovery to preheat outside air supply with heat recovery devices such as rotary air wheels, plate heat exchangers, non-regenerative heat-pipe devices, and run-around loop systems; or

3) Purifying with charcoal or other mediums and recycling exhaust air from toilet areas, dining rooms, and lounges, and other building area;

v) Cogeneration systems which produce steam, heat, or other forms of energy as well as electricity and which meet such fuel efficiency requirements as may be prescribed or approved by DOE and which may be new heat recovery equipment added to existing electrical generation systems;

w) Any otherwise eligible energy conservation measure that involves leased equipment, which will save a substantial amount of energy. Only the costs of installation and connection of such leased equipment are eligible for financial assistance under this program. For purposes of ranking. . . a building for which a leased measure has been proposed, the simple payback period shall be determined by dividing the

total installation and connection costs by the result of subtracting the average annual recurring lease costs from the projected average annual energy cost saving;

x) Any other measures an energy audit or a technical assistance report shows, to the satisfaction of the Secretary, will save a substantial amount of energy. Such measures must be specifically identified in the grant application, and a complete description of the measure, together with calculations and other technical data supporting the projected cost and energy savings must be included in the application. The estimated cost of carrying out recommended ECM's is 3.8 million dollars.

(455.82)

a) The Secretary may make grants to schools, hospitals and coordinating agencies for up to 50 percent of the costs of acquiring and installing energy conservation measures, including solar and other renewable resource measures, for buildings covered by an (approved) application. . .

b) The Secretary may award (up to 10%) for schools and hospitals for technical assistance programs and energy conservation measures in a given grant program cycle to cover more than 50 percent, but not to exceed 90 percent, of the cost of technical assistance program or an energy conservation measure. These additional amounts may be awarded to applicants in a class of severe hardship, ascertained by the State in accordance with the State Plan. . .

Recommended Types of Projects

(455.52)

In Phase II, participating buildings shall request funding for technical assistance analyses based upon recommendations from an energy audit or its equivalent. Funding for energy conservation measures shall be requested by participating school or hospital buildings based upon recommendations from a TA analysis or its equivalent. The State of Montana cannot tell at this time the costs involved or what buildings will be applying for TA and/or ECM funds.

TA Projects

The list of potential TA projects can contain several hundred items, but all shall be generally grouped into the categories of "Heating and Ventilation", "Domestic Hot Water", "Cooling", "Lighting", "Other Mechanical Systems", and "Building Envelope". TA analysts will be requested to carefully consider the potential for utilization of solar and other renewable sources of energy as part of their investigation.

ECM Projects

Acceptable ECM projects shall include those listed above, as well as others, all generally grouped into the same categories used for organizing TA projects. Examples of other projects which are not listed but are potentially applicable include: construction of overhangs that shade windows in summer and admit sunlight in winter; construction of vestibules to create "air locks" at building entrances; installation of ceiling fans to eliminate stratification of air in high-ceilinged spaces; and removal of pavement and/or addition of vegetation near buildings to reduce heat gain in summer.

Identification of Qualified TA Analysts

(455.90)

Qualifications for TA analysts in the State of Montana are taken from the program regulations and require that an analyst:

a) Be a registered professional engineer, licensed in the State of Montana, with a minimum of 2 years experience in building system design and/or energy conservation investigation;

b) Be an architect/engineer team with both registered professionals in their fields and the principal members licensed in the State of Montana. The architect must have a minimum of 2 years experience in building envelope design and/or energy conservation investigation. The engineer must have a minimum of 2 years experience in building system design and/or energy conservation investigation.

c) The State of Montana also requires completion of a State sponsored Technical Assistance workshop prior to commencement of any TA associated with the program (a list of workshops will be available at the State Energy Office).

A previously completed TA report, if approved, may be substituted for completion of the workshop. All such reports will be examined by the TA Review Board and evaluated according to State and Federal program requirements. If the submitted reports meet all requirements, the TA will be placed on the list of certified TA's. If the report does not pass the review board evaluation, the TA will be required to attend one of the workshops.

An updated list of all qualified TA's will be included in the application packet and will be available at all times upon request.

A TA analyst shall not be a representative, owner, or shareholder in any firm that sells or distributes energy products or equipment. However, an analyst is encouraged to utilize the services of such representatives, owners, or shareholders and the services of other professionals for assistance in designing or specifying the best possible system for a particular situation.

Utilizing these qualifications, the Program Manager has prepared a list that gives the name and location of eligible TA analysts. This list is only an aid to be sent to institutions. It will remain the institution's responsibility to make certain the Technical Analyst meets all qualifications.

The list shall be periodically updated to include any eligible professionals not previously listed. Further assurance of compliance with the established qualifications shall be provided by requiring the institution to obtain documentation of the experience and qualifications of the TA selected, as well as the signed certification, that TA meets Federal and State qualifications. This certification will also assure that the TA has no conflicting financial interests (see Appendix E).

Encouragement of Solar and Renewable Resources

As stated above, careful consideration by the TA analyst of the potential for utilizing solar and other renewable resources shall be encouraged. Specifically, the analysts shall be notified of the program's emphasis upon renewable energy through information contained in the TA instruction material. The analyst shall be advised of the importance of investigating a building's solar and renewable potential and

the advantage that a solar or renewable project has in the ranking formula used for evaluating applications. The Technical Analyst packet contains an introductory letter identifying renewable energy potential in each of the 10 regions of the state and information on wind electric power generation. We also are requiring each TA to contact our Renewable Resource engineers prior to Technial Assistance commencement for specific information (see Appendix C).

To particularly emphasize solar energy, the State of Montana has given additional weight to solar projects in the ranking formula concerning conversion to renewable energy resources or coal. In addition, the State is preparing a brochure that will describe approximately one hundred existing projects in the State that utilize solar energy. This brochure shall be available to TA analysts and institutions by early September. The State legislature was encouraged to enact laws allowing tax credits as incentives for undertaking solar projects; those laws have recently been passed.

ASSURANCES

Assurance of O&M Implementation

(455.63)

The State recognizes the importance of implementing all recommended Operating and Maintenance (O&M) procedures before technical assistance programs and energy conservation measures are begun. Therefore, the State shall require certification as specified in the program regulations, that all O&M procedures recommended in the energy audit must be implemented before requesting funds for TAs, and that all O&M procedures recommended in the technical assistance report and the energy audit must be implemented before requesting funds for ECMs. Those O&M procedures recommended but not undertaken must be listed by the appli-

cant, and a written justification for not implementing them must be given. The State of Montana will refuse to recommend funding for an institution which has failed to implement operational and maintenance changes without proper justification.

The State shall follow two additional procedures to assure the implementation and continued use of O&M procedures in institutions receiving assistance under this plan.

a) According to the Montana requirements, each participating building is required to submit reports of its fuel consumption by month for the twelve months immediately following completion of its energy audit. The reduction in consumption measured from these reports will be compared with the savings estimated to have resulted from the implementation of all O&M procedures in the building. If a significant difference between the actual and the reported savings is noted, the building operator will be contacted and the situation discussed. If the actual reduction of energy consumption is reasonably consistent with the estimated savings, then the building shall be judged to have implemented and retained the O&M procedures.

b) On a selective basis, buildings will be inspected for implementation of O&M procedures. A minimum of five (5)% or ten (10) buildings in each category will be monitored or if funds permit, up to 100% of buildings will be monitored.

c) In compliance with 455.63(e), a record of O&M measures undertaken for ECM must be kept and an annual report by month of consumption submitted to the Energy Division, DNRC within 60 days of the close of the annual period.

Assurance of Compliance with State Plan

Compliance with the State Plan shall be assured by:

a) Informing all applicants of the requirements and responsibilities associated with this program, utilizing the information packet supplied to each participant; (see Appendix E)

b) Instructing institutions and TA analysts on the proper actions called for by this State Plan and the program regulations. The State will conduct separate workshops for institutions and technical analysts for the purpose of assisting them in clarification of procedures and requirements for the program. The workshops will also review application forms with the institution representatives and the technical analyst workshop will also review the technical analyst report and reporting forms. This workshop series will continue for Phase II of each cycle of the program. All participating institutions and registered engineers and architects will be notified of scheduled workshops.

c) Requiring a signed statement by participating institutions and analysts acknowledging their awareness of the requirements and responsibilities associated with this program; (see in Appendix E);
and

d) Performing financial audits and program checks on participating institutions on a selective basis, and reporting any inconsistencies to the Secretary.

Assurance That Grants Supplement, Not Supplant Federal Funds

Applicants shall be warned in the information packet that improper use of funds shall render them ineligible for participation in the

program. Federal funds must be used to supplement not supplant State, local and other funds. Funds supplement when they are above previous levels of effort; therefore Federal money cannot be used to free previously budgeted money for some other use. Proof shall be required in the application of proper (i.e., non-Federal) sources of matching funds and utilization of grant funds, and the applicant shall be required to sign a declaration of promised proper utilization of funds. On a selective basis, financial audits shall be conducted to assure the State that funds are being used as directed in this State Plan and the program regulations. A minimum of five percent or ten buildings in each category will be monitored and/or if funds permit, up to 100% of grants will be audited.

The State shall coordinate the Phase II projects with other State energy conservation programs through the Program Manager. All applicable conservation programs shall be identified, and the elements that could potentially affect this grant program shall be noted. The Program Manager shall assure that funds from other conservation programs are not used in violation of the regulations of this program. The financial audits previously described shall investigate this area as well.

Input From Institutions

The State has, and shall continue to seek the involvement of concerned institutions and coordinating agencies in the development and implementation of this grant program. The Advisory Group participating in Phase I has been expanded to include representatives of other agencies and institutions (see Appendix D for list). A meeting was held to describe the Phase II program and to determine the weighting factors and fund allocation procedures required for distribution of Federal funds.

The State Plan was presented in draft form to the Advisory Group for comments and revisions; this final version reflects their involvement. Montana has also sent the State Plan through the A95 review process; a copy of the agencies reviewing this plan is attached (see Appendix D). To assure continued interest and awareness of the program, staff will meet with the various appropriate agencies, groups and organizations in the winter and spring, re-emphasizing the importance of project schedules and explaining application processes.

State Allocation Procedures

Funds shall be allocated to institutions by the State on the basis of their relative need. This need is assessed through a variety of factors (see "Ranking Procedures", below) that measure the potential dollar and energy savings, the amount of energy consumed, and the cost effectiveness of the proposed modifications.

In addition, the safeguards mandated by the program regulations have been adopted to assure equitable distribution between schools and hospitals. As specified, no more than 70% or less than 30% of the total funds allocated for schools and hospitals to the State for any grant cycle shall be received by schools; neither shall hospitals receive more than 70% or less than 30% of the total funds. Similarly, when distributing funds between buildings owned by units of local government and by public care institutions for the technical assistance portion of the program, neither units of local government nor public care institutions shall receive more than 70% or less than 30% of the total funds allocated for that category of institutions to the State in any grant program cycle, with one exception. If, during any grant program cycle, the total gross square footage of the buildings owned by either units of

local government or those owned by public care institutions with approved applications exceed 70% of the combined gross square footage of both, then a modified distribution of funds shall be made. This modified distribution shall allocate funds to reflect the unequal gross square footage distribution within 10%. (For example, if a certain grant cycle finds that the square footage of local government buildings with approved applications requesting funds for TAs is 85% of the total gross square footage of all local government buildings plus public care institution buildings requesting TA funds, then the State shall allocate 85 ±10% of the funds--75% to 95%--to local government buildings.

Publication of the State Plan

Upon approval by the Secretary, the State Plan shall be published and sent to all Advisory Board members, other coordinating agencies, all interested institutions, and all County Seats and public libraries. Coordinating agencies publishing newsletters shall be encouraged to include grant program information in their publications.

Grant Application Submission Procedures

An application packet has been prepared by the Program Manager containing all necessary forms (including the Federal management circulars specified in section 455.3 of the program regulations published April 2, 1979). This packet lists reporting responsibilities, and provides directions for submitting grant applications to the State. It is available for distribution upon request to institutions (see attachment, Technical Assistance Packet Instructions). Applications may be submitted to the State up to ninety (90) days before the end of any grant cycle, at which time they will be evaluated, ranked, and submitted to the Secretary with recommendations for funding. Upon receiving the application and judging the involved

buildings to be eligible, the State shall, in the case of schools, hospitals, and buildings owned by public care institutions, send a copy of the application to the appropriate agency for certification: a) Hospitals and Long Term Care Facilities should address the Department of Health, Planning and Resource Development. b) Schools and *Local Government Buildings should address the Department of Administration, Building Codes Division.

Certification Procedures

Certification shall consist of a review by the appropriate agency to ascertain that:

a) If for a school, the application is consistent with related State progams for educational facilities;

b) If for a hospital, the application is consistent with State health plans under sections 1524 (c) (2) and 1603 of the Public Health Service Act (42 U.S.C. 300m-3 and 300o-2, respectively), and section 1122 of Social Security Act, and has been coordinated through the review mechanisms under section 1523 of the Public Health Service Act; or

c) If for a public care institution, the application is consistent with rules and regulations of the State of Montana Department of Health.

Establishment of Milestones

Also in the application packet shall be instructions to assist institutions in establishing project timelines and milestones. Some examples of acceptable project schedules are included - 30 days to prepare scope of work for bids, 60 days for advertising bid requests, 30 days to approve bid and let contract, 60 days to finalize design plans, 90 days to order and receive materials. See Milestone Attachment

*Where local government mechanisms are not set up for a review process.

Appendix E. Institutions shall be informed of the State's schedule and of the deadlines for submitting applications. The State shall oversee these projects' timelines through the progress reports due at the end of January and July of each year the grantee's program is underway, and through monitoring of programs on a sample basis.

III. PROCESSING

Processing of Technical Assistance Application

Applications received by the State shall be processed each grant cycle by the procedures described below.

For technical assistance (TA) applications:

Applications for TA analysis shall be divided into two groups: Group I, schools and hospitals; and Group II, buildings owned by local governments and public care institutions. The amount of money available to each group is determined by Federal allocation factors described in the program regulations, which include the restriction of awarding to technical assistance programs no more than 30 percent of the combined TA and ECM funds allocated from fiscal year (FY) 1978, no more than 15 percent of the combined allocation from FY 1979, and no more than 5 percent of the combined allocation from FY 1980. Once the application has been received, the State Program Manager shall review it for completeness and evaluate the building involved on the basis of eligibility (see "Identification of Eligible Institutions" in Part I). After ranking all applications those with higher ranking numbers will be reviewed and certified by the appropriate agency. In the cases of schools, hospitals, and public care institutions, forward a copy to the appropriate agency for certification (see "Certification Procedures," above).

Applications shall be ranked on a building-by-building basis within Groups I and II. Each building shall receive a number based on the following formula:

TA Ranking Formula

$$\text{TA Ranking No.} = \frac{\text{Energy Use Index - estimated O\&M BTU savings}}{\text{Degree Days/Year}} + 0.1 \text{ (added only if the building's energy audit was independently conducted)}$$

Where:

Energy Use Index = the total energy consumption of the building for the calendar year immediately preceding the date of application, expressed in BTUs, divided by the total gross square footage.

$$\text{Degree Day} = 65^{\circ} - \frac{\text{(High Temperature for day + Low Temperature for day)}}{2}$$

for each day of the year. (This information will be available through the Montana Energy Division.)

If a building has conducted an acceptable energy audit without Federal funds (see "Independently Performed Energy Audit," below), it receives a "bonus point" of 0.1. If there is a tie in the ranking, the building which had an independent EA will take precedence.

Those buildings with technical assistance projects receiving the higher ranking numbers shall be recommended for funding to the limit of funds available. The next five highest ranking applications shall also be submitted to DOE, if for some reason the top applications are rejected by DOE.

Processing of Energy Conservation Measure Application (Appendix E)

For energy conservation measures:

Only schools and hospitals shall be considered for grant awards to implement energy conservation measures, including solar and other renewable resource measures. The amount of money available for the ECM program is determined by Federal allocation factors described in the program regulations, which include the assurance of awarding to energy conservation measures at least 70% of the combined TA and ECM funds allocated from fiscal year (FY) 1978, at least 85% of the combined allocation from FY 1979, and at least 95% of the combined allocation from FY 1980. Once the application has been received, the State Program Manager shall review it for completeness, evaluate the building(s) involved on the basis of eligibility (see "Identification of Eligible Institutions," Part I), and forward a copy to the appropriate agency for certification (see "Certification Procedures"). Once the building has been found to be eligible and has been properly certified, it shall be ranked.

Applications shall be ranked on a building-by-building basis, except where an energy conservation measure will affect more than one building. If more than one building is thus involved, data from all affected buildings shall be combined for use in the ranking formula in both categories (Schools & Hospitals) as a group. Each building or group of buildings shall receive a number based on the following formula:

ECM Ranking Formula

ECM Ranking No. = Payback Points + Conversion Source Points + Energy Type and Quantity Saved Points + Climate Points + Remaining Life Points

1) Payback Points = $38 - \left(\frac{\text{total cost of all ECMs}}{\text{total annual energy cost savings}} \times 2 - 2\right)$

2) Conversion Source Points =

$$\frac{\text{annual energy cost savings per conversion}}{\text{annual energy cost savings for all ECMs}} \times \text{source factor}$$

Source Factors: Conversion to solar = 24
Conversion to other renewable resources = 20
Conversion to coal = 16

If more than one conversion is to be made, an average will be established by adding the conversion source points from each source and dividing by the number of conversions.

3) Energy Type and Quantity Saved Points =

$$\frac{\text{annual energy savings (BTU) per measure}}{\text{total annual energy savings (BTU) of all ECMs}} \times \text{fuel factor}$$

Fuel Factors: Oil = 21
LPG natural gas = 20
Electricity = 7

If more than one measure is to be implemented an average will be taken by adding all the Energy Type and Quantity Saved Points calculated for all measures and dividing by the number of measures.

4) Climate = $\frac{\text{total degree days of site}}{\text{total degree days of highest DD spot in state (Cooke City 11,316 DD)}} \times 11$

5) Remaining Life Points = (life of building)

for 0 - 15 years = 0
15 - 25 years = 2
25 - 50 years = 4
more than 50 years = 6

Those buildings or groups of buildings with ECM applications receiving the higher ranking number will be recommended for funding to the limit of funds available.

Notification of Ranking Outcome

In compliance with 10CFR 455.73, if the amount recommended by the State, for any TA or ECM is less than the amount requested by the applicant, the State shall indicate to the Secretary the reason for that

recommendation. Prior to submittal of applications to the Secretary, the State shall notify each applicant of how the applicant's building ranked among other similar buildings, and whether and to what extent its application will be recommended for funding, or, if not to be recommended for funding, the reason it was not recommended.

Certification of Ability to Participate

The State shall also certify that each institution that has submitted an application has given its assurance that it is willing and able to participate on the basis of the amounts recommended for that institution in the State ranking. The State also requires the applicants to list the amount and source of non-Federal match. Those institutions which request more than 50 percent funding but which are found ineligible or are recommended for funding at a lower percentage level than requested are still eligible for 50 percent funding, but must still certify their ability to participate at either the lower level of funding or at the 50 percent level.

IV. SEVERE HARDSHIP CASES

Severe Hardship Provisions

As required by the program regulations, the State shall make additional financial assistance, up to 90 percent, available for schools and hospitals experiencing severe hardship based upon an applicant's long-term need or inability to provide the 50 percent non-Federal share. This additional financial assistance shall be available only to the extent necessary to enable such institutions to participate in the program. The Secretary may award 10 percent of the total amount allocated to the State in a given grant cycle to be used as severe hardship funds for TAs and ECMs by schools and hospitals.

Applications for severe hardship received from institutions shall be processed by the State each grant cycle following the procedures described below.

Those institutions which would be selected for 50 percent funding through the general TA or ECM ranking procedures will be considered for additional severe hardship funding.

In the event that the 50 percent matching allocation is exhausted before the severe hardship is allocated the State will go to the next highest ranking application which is eligible for severe hardship and recommend funding wholly from the severe hardship allocation. The State will proceed in this manner through the severe hardship application until all the available funds have been exhausted.

There are five subcategories of institutions eligible to apply for severe hardship. These subcategories are:

1. Hospitals
2. Public Schools
3. Private nonprofit elementary and secondary schools
4. Private nonprofit colleges
5. Community colleges

Within each subcategory there are five levels of severe hardship. These levels were developed on the basis of information and advice received from the Montana Hospital Association, the Commission of Higher Education, Office of Public Instruction and private nonprofit schools. Ranges of severe hardship levels were adjusted so that equitable treatment is given each subcategory.

Severe Hardship Eligibility Requirements

To be eligible for severe hardship classification:

a) A hospital should have its net patient revenue comprise less than ninety-six percent (96%) of its total noncapitalized annual budget for the calendar year in which the application is made.

b) A public school should have a tax rate which is equal to or above the State median rate. This number is found by dividing its total general fund budget for the fiscal year in which the application is made by the total amount received that same year from the State School foundation. The school should be ranked below the sixtieth (60th) percentile of all school districts in the state.

c) A private nonprofit elementary or secondary school should have its tuition from full-time students plus all its direct subsidies comprise less than the State average of seventy-six percent (76%) of its total noncapitalized annual budget for the fiscal year in which the application is made.

d) A private nonprofit college should have its tuition from full-time students plus funds collected from room, board, and special fees comprise less than fifty-nine percent (59%) of its total noncapitalized annual budget for the fiscal year in which the application is made.

e) A community college should have the ratio of the total annual State and local tax support for the fiscal year in which the application is made divided by the average number of full-time students enrolled during all four quarters of that fiscal year be less than the State average of $1,668 per full-time student.

State schools and institutions shall not be eligible for severe hardship classification, because mechanisms already exist for those institutions to seek additional funding from the State. In addition, the 1979 Montana Legislature appropriated one million dollars specifically for the installation of energy conservation measures.

Severe Hardship Ranking Formulas for All Institutions

Eligible institutions shall each receive a ranking number based upon the ranking formulas for each subcategory. Severe hardship funds shall be allocated on the basis of that ranking number. If the State of Montana recommends hardship funding lower than requested by the applicant, the State will request from the applicant a certification of ability to participate at the lower level of Federal funding..

The Energy Cost Impact shall be calculated for every eligible institution, regardless of category, by the following formula:

$$\text{Impact No.} = \frac{\text{Total Annual Energy Costs for the Current Calendar Year (\$)}}{\text{Total Annual Non-Capitalized Budget for the Current Calendar Year (\$)}}$$

Each institution then receives ranking points as follows:

Impact No.	Ranking Points
.000 - .019	1
.020 - .029	3
.030 - .039	5
.040 - .049	7
.050 and above	10

A second ranking formula specific to the institution category is needed. For hospitals, the second ranking formula is:

$$\text{Revenue No.} = \frac{\text{Net Patient Revenue (\$)}}{\text{Total Annual Non-Capitalized Budget for the Current Calendar Year (\$)}}$$

Each hospital receives ranking points as follows:

Revenue No.	Ranking Points
.96 and above	Not Eligible
.90 - .95	1
.84 - .89	3
.78 - .83	5
.72 - .77	7
.71 and below	10

The Severe Hardship ranking number for each hospital is found by adding the ranking points from the Impact and the Revenue formulas and dividing the sum by 2:

$$\text{Severe Hardship Ranking No. (Hospital)} = \frac{\text{Impact points + Revenue Points}}{2}$$

For Public Schools:

Eligible institutions shall each receive a ranking number based upon the ranking formulas for each subcategory. Severe hardship funds shall be allocated on the basis of that ranking number. If the State of Montana recommends hardship funding lower than requested by the applicant the State will request from the applicant a certification of ability to participate at the lower level of Federal funding.

The two formulas which follow will determine if a public school can apply for severe hardship funding:

1) OPI Rank No. = Total General Fund Budget for Current Fiscal Year ($)*
Total Amount Received from School Foundation for Current Fiscal Year ($)

*(compared with all other schools (High School or Elementary)

2) Budget No. Percentile = Office of Public Instruction Rank No.
Total Number of Schools (High Schools or Elementary) in Category

In terms of eligibility, those schools which have a Budget Percentile of 60 percent or greater is ineligible. Conversely, those which receive a percentile between 0 and 59 percent are eligible and then proceed to the next three computations to determine the S.H. amounts.

The energy cost impact shall be calculated for every eligible institution, regardless of subcategory, by the following formula:

Impact No. = Total Annual Energy Costs for the Current Calendar Year ($)
Total Annual Non-Capitalized Budget for the Cur. Cal. Yr. ($)

Each institution then received ranking points as follows:

Impact No.	Ranking Points
.000-.019	1
.020-.029	3
.030-.039	5
.040-.049	7
.050 and above	10

For public schools, the second ranking formula is:

Tax No. = Amount the Tax Rate is for the current fiscal year (mills)

Each public school receives ranking points as follows:

Tax No. (Percentile)	Ranking Points
Less Than State Median (rank when compared with all school districts in the State)	Not Eligible (0)
51 - 60	1
61 - 70	3
71 - 80	5
81 - 90	7
91 -100	10

The Severe Hardship ranking number for each public school is found by adding the ranking points from the Impact and Tax, formulas and dividing by 2:

S. H. Ranking No. (Pub. Sch.) = Impact points + Tax points
2

Because the information required for the first two formulas will change from year to year, this data will come directly from OPI. Prior to filling out the Severe Hardship application, the applicant should call the Program Manager, who will determine the amount, if any, for which the building is eligible (449-3940).

For private non-profit elementary and secondary schools, the second ranking formula is:

$$\text{Tuition No.} = \frac{\text{Tuition (from full-time students)} + \text{All Direct Subsidies (\$)}}{\text{Total Annual Non-Capitalized Budget for the Cur. Fiscal Yr. (\$)}}$$

Each private non-profit school receives ranking points as follows:

Tuition No. (percentile)	Ranking Points
.76 and above	Not Eligible
.70 - .75	1
.64 - .69	3
.58 - .63	5
.52 - .57	7
.51 and below	10

The Severe Hardship ranking number for each private non-profit elementary and secondary school is found by adding the ranking points from the Impact and the Tuition formulas and dividing the sum by 2:

$$\text{S.H. Ranking No. (Pub. NP Sch.)} = \frac{\text{Impact points} + \text{Tuition points}}{2}$$

For private non-profit colleges, the second ranking formula is:

$$\text{Tuition \& Fees No.} = \frac{\text{Tuition (from full-time students)} + \text{Rm. \& Bd. Fees} + \text{Special Fees (\$)}}{\text{Total Annual Non-Capitalized Budget for the Cur. Fiscal Yr. (\$)}}$$

Each private non-profit college receives ranking points as follows:

Tuition & Fees No.(percentile)	Ranking Points
.59 and above	Not Eligible
.55 - .58	1
.51 - .54	3
.47 - .50	5
.43 - .46	7
.42 and below	10

The Severe Hardship ranking number for each private non-profit college is found by adding the ranking points from the Impact and Tuition & Fees formulas and dividing the sum by 2:

$$\text{S.H. Ranking No. (Pub. NP Col.)} = \frac{\text{Impact points} + \text{Tuition \& Fees points}}{2}$$

For community colleges, the second ranking formula is:

Tax Support No. =

$$\frac{\text{Total State and Local Tax Support for Cur. Fiscal Yr. (\$)}}{\text{Avg. No. of Full-Time Students During 4 Qtrs. of Cur. Fiscal Yr. (stu.)}}$$

Each community college receives ranking points as follows:

Tax Support No. ($/student)	Ranking Points
1668 and above	Not Eligible
1651 - 1667	1
1631 - 1650	3
1611 - 1630	5
1591 - 1610	7
1590 and below	10

The Severe Hardship ranking number for each community college is found by adding the ranking points from the Impact and the Tax Support formulas and dividing the sum by 2:

$$\text{S.H. Ranking No. (Com. Col)} = \frac{\text{Impact points} + \text{Tax Support points}}{2}$$

Allocation of Severe Hardship Funds

Severe hardship funds shall be allocated by awarding those institutions with the highest Severe Hardship Ranking Number, the percentage of Federal funding shown in the Allocation Table below, up to the amount of funding requested in the application. The institutions with the second highest ranking number will then, if there are severe hardship funds still remaining, be awarded the percentage shown in the Allocation Table, again up to the amount of funds requested. The institutions with the third highest number will then be awarded, and so on, until all severe hardship funds are expended.

Allocation Table

Severe Hardship Ranking No.	Additional Severe Hardship Funds (%)	Total Federal Funds (%) (50% + Sev. Hdship. Funds)
10.0	40	90
9.5	38	88
9.0	36	86
8.5	34	84
8.0	32	82
7.5	30	80
7.0	28	78
6.5	26	76
6.0	24	74
5.5	22	72
5.0	20	70
4.5	18	68
4.0	16	66
3.5	14	64
3.0	12	62
2.5	10	60
2.0	8	58
1.5	6	56
1.0	4	54
0.5	2	52
0.0	0	50

Approval of Independently Performed Energy Audit

Any applicant wishing to have an independently performed energy audit accepted in lieu of a Federally funded audit must (see Appendix E):

a) Submit the energy audit report to the State Program Manager for review for compliance with Federal Regulations;

b) Declare that no major building or mechanical system modifications have occurred since the audit was conducted;

c) Submit a description of the auditor's qualifications and show them to be equal to those specified in the Phase I application;

d) Show that the requirements of a Federal energy audit were met; and

e) Submit energy consumption data elements from the audit on a form supplied by the State so that the building(s) can be entered onto the State's data file for Phase II.

The TA ranking formula gives preference, all other factors being equal, to an independently performed audit (see TA Ranking Formula).

Approval of Independently Performed Technical Assistance

Any applicant wishing to have an independently performed technical assistance analysis accepted in lieu of a Federally funded TA must (see Appendix E):

a) Submit the TA report to the State Program Manager for review for compliance with Federal regulations;

b) Declare that no major building or mechanical system modifications have occurred since the TA was performed;

c) Submit the TA analyst's qualifications and show them to be equal to those specified in the State Plan;

d) Show that the requirements of a Federal TA were met by requiring certification from analysts that it meets Federal regulations;

e) Submit energy consumption data elements from the TA report on a form supplied by the State so that the building can be entered into the State's data file for Phase II (see Appendix B).

Provisions for Allowing Credit for Past Work

Applicant expenditures for a TA program commenced after November 8, 1978, for a building may be wholly or partially classified in the discretion of the Secretary as non-Federal funds for the purposes of matching grants awarded for energy conservation measures. Funds expended by an institution after November 8, 1978, for installation of one or more ECM's may be counted towards the institution's match for additional ECM's.

The final determination as to whether this match is wholly or partially allowed will be made by the Secretary of DOE. (Ref. USDOE Bulletin 4, 5-9-79, #7)

In general, credit toward the institutions match may be allowed if:

a) The measures for which credit is being requested were recommended in the TA Report.

b) They are included in the ECM application and were included in the factors upon which the application was ranked (i.e., average simple payback, energy source, energy savings, etc.).

c) They otherwise qualify as an eligible energy conservation measure (payback between 1 - 15 years, payback less than useful life of building, etc.).

VI. PROGRAM MANAGEMENT

The management of this grant program shall be the responsibility of the State Program Manager, Energy Division, Montana Department of

Natural Resources and Conservation (DNRC). The Program Manager shall oversee the entire program, coordinating the efforts of the management staff, contractors, agencies, and institutions. The Program Manager shall report regularly to the Bureau Chief of the Energy Division to discuss program progress and status, problems, and any other appropriate matters. The Program Manager shall also be responsible for the semi-annual reports to the Secretary being timely and in compliance with the requirements as specified in the program regulations.

Maintenance of Project Schedules

The project schedules established by institutions as part of their application shall be maintained by review of their semi-annual progress reports (see "Establishment of Milestones") and by monitoring of institutions on a selective sample basis, determined by formula.

Financial Audits

The financial auditing associated with assuring compliance with this State Plan and with assuring proper utilization of Federal funds shall be the responsibility of the State Program Manager, who shall direct the investigations on a selective basis, and in compliance with (455.73). A minimum of 5% or ten (10) buildings, whichever is greater, will be monitored and if funds permit, up to 100% of grants will be audited. The State shall notify the Secretary of any non-compliance.

On-Site Investigations

Likewise, the on-site inspection of facilities associated with assuring implementation of O&M procedures shall be the responsibility of the State Program Manager.

Adherence to Reporting Requirements

Adherence to reporting requirements will be assured by the previously described State Plan compliance procedures (see "Assurance of Compliance with State Plan"), which include financial audits and program checks performed on a selective basis.

The State has contracted with a Registered Professional Engineer to assist in the review of technical aspects of the program, such areas as TA & ECM application review, monitoring TA & ECM on a sample basis and to assist in Energy Audit workshops. The program manager and assistant manager will be responsible for processing, ranking and eligibility of institutions and reporting requirements. The State of Montana has an additional full-time position which will open in July, 1980. If level of participation is lower than anticipated, we will monitor a larger sample. The State of Montana will use in-house expertise or contract with a CPA firm for financial audits.

Environmental Assessment

If any applicant for ECM is aware of any adverse environmental impact which may arise from adoption of any energy conservation measures, an analysis of that impact and the applicant's plan to minimize or avoid such impact will be made.

Plan for Completion of PEAs

Those institutions not completing their preliminary energy audits (PEA) by September 1, 1979, have been re-advised that completion of PEAs will allow them to participate in this grant program. All hospitals, schools, public care institutions, cities, and counties in Montana will be notified of the buildings under their authority which have not submitted PEAs. In addition, those coordinating agencies publishing newsletters will be

urged to include information on the completion of PEAs in their publications. The Energy Division, DNRC, will thoroughly publicize this grant program and encourage the involvement of all eligible institutions. These efforts shall continue into the second grant cycle to the extent that the available funds permit.

APPENDIXES

(Number in parenthesis indicates page in State Plan where reference occurs.)

NOTE:

The appendixes listed below have been published separately from this document. Therefore, the pages for each appendix are numbered as an entity.

CONTENTS

APPENDIX A

PRELIMINARY ENERGY AUDIT DATA

PRELIMINARY ENERGY AUDIT (PEA) DATA

Institutions which completed PEA forms but did not submit an energy audit by November 1, 1979 have been asked to participate. Energy audit workshop locations and schedules have been established. The state will review its mailing list of eligible institutions and mail an information packet to those institutions that have not completed PEA data forms. This packet contains PEA data forms, a program information sheet and a list of energy audit workshops they may attend. A program Milestone of June 30, 1981 has been set for completion of energy audits for those institutions which desire to participate in the Institutional Buildings Grant Program.

Some general problems have appeared in the program. PEA data submitted has been found to be erroneous in recurring areas. Many institutions inadequately estimate such factors as:

a) building square footage;

b) the amount of glass in south-facing walls;

c) the number of hours the roof and south-facing walls are shaded each day;

d) fuel oil and coal consumption dates of use confused with billing or delivery dates.

In addition, many buildings are not being metered individually for energy consumption, so consumption data for each building has not been calculated by the institution.

Energy Audit Problem:

The Energy Audit Workbook, Section 4 of Volume I Energy Audit - "Making Cents of Your Energy Dollar" - has proved to be inadequate in two respects:

a) it does not contain calculations for estimating O & M savings;

b) optional data denoted by asterisk are not supplied. As a result, estimated energy savings per system are extremely difficult

if not impossible to calculate.

Certain energy conservation efforts are particularly applicable to Montana's climate and geographic conditions; as follows:

- Increased insulation requirement R values.

- Increased window blocking by insulating devices.

- Air lock vestibules for building entrances.

- Heat reclaiming devices.

- Geothermal areas, opportunities for utilization exist for specific areas in the State.

- Wind power energy generation - the State has particularly adaptable locations.

- Hydro-power generation - potential for small scale generation throughout the State.

- Solar potential - exists at a greater degree east of the continental divide.

- Biomass - State forest products are potential sources for conversion.

PEA Data Studies - Overview

a) Studies 1, 2, 3, 4 examine the specific institutional categories via computer examination of energy consumption.

b) Combined data study of 1, 2, 3, 4 totals all buildings via energy consumption characteristics.

c) Data Study Page 10, estimates BTU savings for operational and maintenance (O & M) changes.

d) Studies 5, 6, 7, 8 examine the specific institution categories via computer examination of energy consumption. Adjusted BTU usage per level of consumption category is computed which takes into consideration O & M estimated savings. Potential BTUs saved for recommended ECMs are estimated by taking the particular institution common energy utilization characteristics and assigning a mean percentage level of savings.

e) Combined total of studies 5, 6, 7, 8 total the energy consumption characteristics of all buildings. In each energy use range, a total of estimated BTUs is given:

   - per energy consumption level characteristic.
   - grand total of BTUs saved on all buildings.

f) The energy conservation measures (ECM) that have been used in studies 5, 6, 7, 8 to establish estimated potential BTU savings from ECMs have not been analyzed to show the cost of implementation because of the diversified nature of the potential ECMs.

g) Solar Potential Study - has totaled the number of buildings with completed PEAs that fall into categorical ranges of potential characteristics that could influence placement of solar equipment.

h) PEA data information totalling the energy conservation measures that institutions report they have installed.

PRELIMINARY ENERGY AUDIT DATA ANALYSIS - SCHOOLS, HOSPITALS, PUBLIC CARE AND LOCAL GOVERNMENT BUILDINGS

The material contained in the following studies is the result of analysis of data received from participating institutions as of October 5, 1979. The analysis was divided into separate studies based on the types of institutions eligible for this program.

The analysis examined variations in buildings on the basis of their BTU usage per square foot of the building area per degree day. This was done by breaking the BTU usages into ranges within which the data was to be examined. All facilities included in the study were split into four ranges of BTU usage. The BTU ranges chosen included the following:

Schools, Hospitals, Public Care Buildings and Local Government Buildings

A. BTU usage - very efficient - less than 07 BTU/sq.ft./D.D.

B. BTU usage - efficient - 07 to <20 BTU/sq.ft./D.D.

C. BTU usage - inefficient - 20 to <50 BTU/sq.ft./D.D.

D. BTU usage - very inefficient - 50 BTU/sq.ft./D.D. or more

The ranges were chosen to include a reasonable representation within each institutional category so that a broad data base could be obtained.

While these studies can prove beneficial in overall analysis of energy usage in the State of Montana, the evaluation format does contain certain limitations.

The information contained on these Data Study forms is only as reliable as the information provided by the institution (via PEA and EA forms). While the information is assumed to be reasonably accurate, the Montana Energy Division cannot guarantee the accuracy of the responses obtained.

DATA STUDY #1 - SCHOOL BUILDINGS

Buildings included in this study are divided into the following categories:

A) BTU Usage - very efficient - less than 07 BTU/sq.ft./D.D.
B) BTU Usage - efficient - 07 to < 20 BTU/sq.ft./D.D.
C) BTU Usage - inefficient - 20 to < 50 BTU/sq.ft./D.D.
D) BTU Usage - very inefficient - 50 BTU/sq.ft./D.D. or more
E) Total each category

		A	B	C	D	E
I.	General Information					
1.	Number of Buildings in Category	19	89	34	35	177
2.	Total Sq. Footage in Category	578,649	4,379,991	1,049,594	1,676,364	7,684,598
3.	Total BTU Usage (all buildings) ($x10^9$)	20.9165	545.3524	223.7266	2805.1088	3595.1043
4.	Average Yearly BTU Usage/Bldg. ($x10^9$)	1.1009	6.1276	6.5802	80.1460	20.3113
5.	Average Yearly BTU Usage/ft^2/Bldg. ($x10^4$)	3.6147	12.4510	21.3155	167.3329	46.7832
II.	Building Usage					
1.	Elementary	4	42	13	29	88
2.	Secondary	1	24	10	4	39
3.	College or University	13	12	9	1	35
4.	Vocational	1	5	1		7
5.	Local Education Administrative		1		1	2
6.	Other		5	1		6

DATA STUDY #2 - HOSPITALS

Buildings included in this study are divided into the following categories:

A) BTU Usage - very efficient - less than 07 BTU/sq.ft./D.D.
B) BTU Usage - efficient - 07 to <20 BTU/sq.ft./D.D.
C) BTU Usage - inefficient - 20 to <50 BTU/sq.ft./D.D.
D) BTU Usage - very inefficient - 50 BTU/sq.ft./D.D. or more
E) Total of all categories

I. General Information	A	B	C	D	E
1. Number of Buildings in Category		2	16	6	24
2. Total Sq. Footage in Category		90,305	1,266,283	384,191	1,740,779
3. Total BTU Usage (all buildings) ($x10^9$)		12.0397	374.6665	494.8678	881.5740
4. Average Yearly BTU Usage/Bldg. ($x10^9$)		6.0199	23.4167	82.4780	36.7323
5. Average Yearly BTU Usage/ft^2/Bldg. ($x10^4$)		13.3323	29.5879	128.8078	50.6425
II. Building Usage					
1. General		2	16	6	24

DATA STUDY #3 - PUBLIC CARE BUILDINGS

Buildings included in this study are divided into the following categories:

A) BTU Usage - very efficient - less than 07 BTU/sq.ft./D.D.
B) BTU Usage - efficient - 07 to < 20 BTU/sq.ft./D.D.
C) BTU Usage - inefficient - 20 to < 50 BTU/sq.ft./D.D.
D) BTU Usage - very inefficient - 50 BTU/sq.ft./D.D. or more
E) Total all categories

I. General Information	A	B	C	D	E
1. Number of Buildings in Category	1	1	7		8
2. Total Sq. Footage in Category	unknown	6,322	304,777		311,099
3. Total BTU Usage (all buildings) ($x10^9$)	.4040	1.8477	84.6000		86.8517
4. Average Yearly BTU Usage/Bldg. ($x10^9$)	.4040	1.8477	12.0857		9.6502
5. Average Yearly BTU Usage/Bldg. ($x10^4$)	40400.0000	29.2265	27.7580		27.9177
II. Building Usage					
1. Nursing Home			7		7
2. Long Term Care (other than nursing home)					
3. Rehabilitation Facility		1			1
4. Residential Child Care	1				1

DATA STUDY #4 - LOCAL GOVERNMENT BUILDINGS

Buildings included in this study are divided into the following categories:

A) BTU Usage - very efficient - less than 07 BTU/sq.ft./D.D.
B) BTU Usage - efficient - 07 to <20 BTU/sq.ft./D.D.
C) BTU Usage - inefficient - 20 to <50 BTU/sq.ft./D.D.
D) BTU Usage - very inefficient - 50 BTU/sq.ft./D.D. or more
E) Total of all categories

		A	B	C	D	E
I.	General Information					
1.	Number of Buildings in Category	1	12	15	3	31
2.	Total Sq. Footage in Category	5,300	596,907	314,933	54,000	971,140
3.	Total BTU Usage (all buildings) ($x10^9$)	.1747	94.1032	80.5158	66.0239	240.8176
4.	Average Yearly BTU Usage/Bldg. ($x10^9$)	.1747	7.8419	5.3677	22.0080	7.7683
5.	Average Yearly BTU Usage/ft^2/Bldg. ($x10^4$)	3.2962	15.7651	25.5660	122.2665	24.7974
II.	Building Usage					
1.	Offices		3	4	2	9
2.	Storage	1				1
3.	Service/Garage	2	6			8
4.	Library	1	1			2
5.	Police Station					
6.	Fire Station		1			
7.	Other	1	5	3	1	10

COMBINED TOTAL OF DATA STUDY #1, 2, 3, 4
% OF ESTIMATED BTU SAVINGS FOR O & M CHANGES

Buildings included in this study are divided into the following categories:

A) BTU Usage
B) BTU Usage
C) BTU Usage
D) BTU Usage
E) Total of Categories

I. General Information	A	B	C	D	E
1. Number of Buildings in Category	21	104	72	44	241
2. Total Sq. Footage in Category	583,949	5,073,525	2,935,587	2,114,555	10,707,616
3. Total BTU Usage (all buildings) ($x10^9$)	21.4952	653.3430	763.5089	3366.0005	4804.3476
4. Average Yearly BTU Usage/Bldg. ($x10^9$)	1.0236	6.2821	10.6043	76.5000	19.9351
5. Average Yearly BTU Usage/ft /Bldg.($x10^4$)	3.6810	12.8775	26.0087	159.1825	44.8685
II. Estimated BTU Savings for O & M Changes x 10^9	A(.05%)	B(.10%)	C(.25%)	D(.40%)	E
1. Schools - Est. Savings for Category	1.046	54.535	55.932	1122.044	1233.557
2. Hospitals - Est. Savings for Category	0	1.204	93.666	197.947	292.817
3. Public Care - Est. Savings for Category	unknown	.185	21.150	0	21.335
4. Local Government - Est. Savings for Category	.0087	9.410	20.129	26.401	55.949
Total BTU Saved in Category Column x 10^9	1.055	65.334	190.877	1346.392	
Grand Total BTU Saved all Categories x 10^9					1603.658

PEA DATA STUDY - Estimated BTU Savings for Operational and Maintenance Changes (O & M)*

Buildings included in this study are divided into the following categories:

A) BTU Usage - very efficient - less than 07 BTU/sq.ft./D.D.
B) BTU Usage - efficient - 07 to <20 BTU/sq.ft./D.D.
C) BTU Usage - inefficient - 20 to <50 BTU/sq.ft./D.D.
D) BTU Usage - very inefficient - 50 BTU/sq.ft./D.D. or more
E) Total of Categories

I. General Information		A	B	C	D	E
1.	Number of Buildings in Category	21	104	72	44	241
2.	Total Sq. Footage in Category	583,949	5,073,525	2,935,587	2,114,555	10,707,616
3.	Total BTU Usage (all buildings) ($x10^9$)	21.4952	653.3430	763.5089	3366.0005	4804.3476
4.	Estimated percentage of savings attributed to O & M changes (%)	.05	.10	.25	.40	
5.	Estimated BTU savings for O & M changes ($x10^9$)	1.055	65.334	190.877	1346.392	1603.658*
6.	Adjusted BTU usage after estimated O & M changes ($x10^9$)	20.4492	588.009	707.5769	2243.9565	3200.6896
II. Percentage the Estimated Savings is of the Total BTU Savings						
1.	Schools	.06	3	3	70	76.06
2.	Hospitals	0	.08	6	12	18.08
3.	Public Care	unknown	.01	.1	0	.11
4.	Local Government	.0005	.5	1	2	3.5005
5.	% in each BTU Category	.0605	3.59	10.1	84	97.8

III. Distribution Problem

1. Eighty four percent of the potential energy savings is derrived from 18% of the buildings (Column D).

2. Forty eight percent of the least efficient buildings (total buildings in Column C & D) have a potential energy savings through O & M changes that amount to 94% of the potential savings of all the categories.

3. Percentage distribution and the estimated BTU saved can be radically affected by assigning a greater percentage of savings potentials per category than the values assigned in this study.

DATA STUDY #5 - SCHOOL BUILDINGS
Potential BTU Saved for Potential ECM's Recommended*

Buildings included in this study are divided into the following categories:

A) BTU Usage - very efficient - less than 07 BTU/sq.ft./D.D.
B) BTU Usage - efficient - 07 to <20 BTU/sq.ft./D.D.
C) BTU Usage - inefficient - 20 to <50 BTU/sq.ft./D.D.
D) BTU Usage - very inefficient - 50 BTU/sq.ft./D.D. or more
E) Total of Categories

I. General Information	A	B	C	D	E
1. Number of Buildings in Category	19	89	34	35	177
2. Total Sq. Footage in Category	578,649	4,379,991	1,049,594	1,676,364	7,684,598
3. Total BTU Usage (all buildings) ($x10^9$)	20.9165	545.3524	223.7266	2805.1088	3595.1043
4. Adjusted BTU Usage after estimated O & M Changes ($x10^9$)	19.8705	490.8174	167.7946	1683.0648	2361.5473
5. Estimated Savings for ECM Changes in percentage if implemented	.22	.22	.22	.22	.22
6. Estimated BTU Savings for ECM ($x10^9$)	4.37	107.99	36.91	370.27	*519.54

II. Methodology for Estimating ECM Savings

Refer to Volume I - Making Cents of your Energy Dollar, page 7

Energy	Percentage of Utilization Total	Possible Percentage of Savings	Mean	Percentage of Total Based on Mean
HVAC	65%	0 - 90	30	19½
Lighting General Electrical	15%	2 - 40	10	1½
Special	10%	0 - 100	0*	0
Food Services	7%	2 - 20	10	.7
Hot Water	3%	20 - 60	25	.75
			Total	22

*Special Services - least likely to have a reduction due to needs of special education

DATA STUDY #6 - HOSPITALS
Potential BTU's Saved for Potential ECM's Recommended*

Buildings included in this study are divided into the following categories:

A) BTU Usage - very efficient - less than 07 BTU/sq.ft./D.D.
B) BTU Usage - efficient - 07 to < 20 BTU/sq.ft./D.D.
C) BTU Usage - inefficient - 20 to < 50 BTU/sq.ft./D.D.
D) BTU Usage - very inefficient - 50 BTU/sq.ft./D.D. or more

I. General Information	A	B	C	D	E
1. Number of Buildings in Category	0	2	16	6	24
2. Total Sq. Footage in Cateogry		90,305	1,266,283	384,191	1,740,779
3. Total BTU Usage (all buildings) ($x10^9$)		12,0397	374.6665	494.8678	881.5740
4. Adjusted BTU Usage after Estimated O & M Changes ($x10^9$)		10.8357	281.0005	296.9208	588.7570
5. Estimated Savings for ECM Changes in percentage if implemented		.045	.045	.045	.045
6. Estimated BTU's Saved for ECM ($x10^9$)		.49	12.65	13.36	*26.50

II. Methodology for Estimating ECM Savings

Refer to Volume I - Making Cents of your Energy Dollar, page 8

Energy Utilization	Percentage of Total	Possible Percentage of Savings	Mean	Percentage of Total Based on Mean
HVAC	60%	0 - 20	3	2
Lighting General Electrical	15%	0 - 10	3	.5
Laundry	12%	0 - 50	10	1.2
Food Service	7%	2 - 20	10	.7
Medical Equipment	4%	0 - 10	0	0
Incineration/ Sterilization	2%	0 - 50	5	.1
			Total	4.5

DATA STUDY #7 - PUBLIC CARE BUILDINGS
Potential BTU's Saved for Potential ECM's Recommended*

Buildings included in this study are divided into the following categories:

A) BTU Usage - very efficient - less than 07 BTU/sq.ft./D.D.
B) BTU Usage - efficient - 07 to <20 BTU/sq.ft./D.D.
C) BTU Usage - inefficient - 20 to <50 BTU/sq.ft./D.D.
D) BTU Usage - very inefficient - 50 BTU/sq.ft./D.D. or more
E) Total of all Categories

I. General Information	A	B	C	D	E
1. Number of Buildings in Category	1	1	7	0	8
2. Total Sq. Footage in Category	unknown	6,322	304,777		311,099
3. Total BTU Usage (all buildings) ($x10^9$)	.4040	1.8477	84.6000		86.8517
4. Adjusted BTU Usage After Estimated O & M Changes ($x10^9$)	unknown	1.6627	63.4500		65.5167
5. Estimated Savings for ECM Changes in percentage if Implemented	.00172	.00172	.00172		.00172
6. Estimated BTU's Saved for ECM ($x10^9$)	unknown	.0029	.1091	0	*.1127

II. Methodology for Estimating ECM Savings

Refer to Volume I - Making Cents of Your Energy Dollar, page 10

Energy Utilization	Percentage of Total	Possible Percentage of Savings	Mean	Percentage of Total Based on Mean
HVAC	60%	0 - 90	25	15
Lighting General Electrical	18%	0 - 10	3	.5
Laundry	9%	0 - 50	10	.9
Food Service	7%	2 - 20	10	.7
Medical Equipment	4%	0 - 10	0	0
Sterilization	2%	0 - 50	5	.1
			Total	17.2

DATA STUDY #8 - LOCAL GOVERNMENT BUILDINGS
Potential BTU's Saved for Potential ECM's Recommended*

Buildings included in this study are divided into the following categories:

A) BTU Usage - very efficient - less than 07 BTU/sq.ft./D.D.
B) BTU Usage - efficient - 07 to <20 BTU/sq.ft./D.D.
C) BTU Usage - inefficient - 20 to <50 BTU/sq.ft./D.D.
D) BTU Usage - very inefficient - 50 BTU/sq.ft./D.D. or more
E) Total of all categories

I. General Information		A	B	C	D	E
1.	Number of Buildings in Category	1	12	15	3	31
2.	Total Sq. Footage in Category	5,300	596,907	314,933	54,000	971,140
3.	Total BTU Usage (all buildings) ($x10^9$)	.1747	94.1032	80.5188	66.0239	240.8176
4.	Adjusted BTU Usage After Estimated O & M Changes ($x10^9$)	.1660	84.6932	60.3868	39.6229	184.8689
5.	Estimated Savings for ECM Changes in percentage if Implemented	.26	.26	.26	.26	.26
6.	Estimated BTU's Saved for ECM ($x10^9$)	.043	22.02	15.70	10.30	*48.07

II. Methodology for Estimating ECM Savings

Refer to Volume I - Making Cents of Your Energy Dollar, page 9

Energy Utilization	Percentage of Total	Possible Percentage of Savings	Mean	Percentage of Total Based on Mean
HVAC	76%	0 - 90	25	19
Special Functions	13%	0 - 100	30	4
Lighting	11%	0 - 50	30	3
			Total	26

COMBINED TOTAL OF DATA STUDY #5, 6, 7, 8 AND ESTIMATED BTU SAVINGS FOR ECM CHANGES*

Buildings included in this study are divided into the following categories:

A) BTU Usage - very efficient - less than 07 BTU/sq.ft./D.D.
B) BTU Usage - efficient - 07 to <20 BTU/sq.ft./D.D.
C) BTU Usage - inefficient - 20 to <50 BTU/sq.ft./D.D.
D) BTU Usage - very inefficient - 50 BTU/sq.ft./D.D. or more
E) Total of all categories

		A	B	C	D	E
I.	General Information					
1.	Number of Buildings in Category	21	104	72	44	241
2.	Total Sq. Footage in Category	583,949	5,073,525	2,935,587	2,114,555	10,707,616
3.	Total BTU Usage (all buildings) ($x10^9$)	21.4952	653.3430	763.5089	3366.0005	4804.3476
4.	Estimated BTU savings for O & M changes ($x10^9$)	1.055	65.334	190.877	1346.392	1603.658
5.	Adjusted BTU Usage After Estimated O & M Changes ($x10^9$)	20.4492	588.009	707.5769	2243.9565	3200.6896
6.	ECM Estimated BTU Savings in percentage	.1856537	.1856537	.1856537	.1856537	.1856537
II.	Estimated BTU Savings for ECM Changes ($x10^9$)					
1.	Schools - Est. Savings for Category	4.37	107.99	36.91	370.27	519.54
2.	Hospitals - Est. Savings for Category	0	.49	12.65	13.36	26.50
3.	Public Care - Est. Savings for Category	unknown	.0029	.1091	0	.1127
4.	Local Government - Est. Savings for Category	.043	22.02	15.70	10.30	48.07
	Est. Total BTU Saved in Category Column x 10^9	4.41	130.50	65.37	393.93	
	Est. Grand Total BTU Saved all Categories x 10^9					*594.22

PEA SOLAR POTENTIAL DATA:

As of October 9, 1979, 317 PEA forms have been processed and the breakdown of solar characteristics are as follows per building category:

	Flat Roof	Roof Pitched South	Roof Pitched Other Than South	South Wall Glass 0-25%	South Wall Glass 25-75%	South Wall Glass 75-100%
SCHOOL BUILDINGS						
Elementary	79	9	13	64	33	2
Secondary	44	3	5	30	19	2
College or University	32	7	5	25	18	1
Vocational	5	2	1	7	1	-
Local Admin. Building	3	1	-	3	1	-
Other	13	13	15	35	4	2
	176	35	39	164	76	7
HOSPITAL BUILDINGS						
General	24	3	-	14	13	-
Other					-	-
	24	3		14	13	
LOCAL GOVERNMENT BUILDINGS						
Office	6	-	5	10	1	-
Storage	1	-	-	1	-	-
Service	2	2	4	7	1	-
Library	2	-	-	1	1	-
Fire Station	1	-	-	1	-	-
Other	6	1	3	7	3	-
	18	3	12	27	6	
PUBLIC CARE BUILDINGS						
Nursing Home	5	2	1	3	5	-
Rehabilitation Facility	1	-	-	1	-	-
Residential Child Care Center	-	1	-	-	-	1
	6	3	1	4	5	1

The 260 energy conservation measures that have been completed are the results of a comprehensive effort to install energy-saving equipment in public buildings. The number and description of most of these ECM's are listed below:

No. Installed	Description of ECM
51	wall and roof insulation
23	storm window installation
35	air intake control
19	thermal drapes
22	vestibule door
64	caulking and weatherstripping
26	automatic night temperature setback control
5	replacement of windows with R-19 wall
3	replacement of incandescent with fluorescent lighting
2	pipe insulation
1	automatic temperature control

APPENDIX B

PHASE I

Step 1 Preliminary Energy Audit Forms

Step 2 Energy Audit Workbook

APPENDIX B

PRELIMINARY ENERGY AUDIT DATA SHEET

STEP I: PHASE I

I.D. [ ] FOR OFFICE USE ONLY

NOTE: Only one building or structure may be reported on a single form.

1 Name of Building [1]

2 Street Address [2]

3. Area Type (R - Rural, U - Urban) [3]

4. City [4] 5. County [5]

6. State [6] 7. Zip [7]

8 Building Owner [8]

9. Street Address [9]

10. City [10] 11. State [11] 12. Zip [12]

13. Building Energy Coordinator or Contact Person [13]

FOR OFFICE USE ONLY 14. Region [14] 15. Station [15]

16 Do you intend to participate in the energy audit? (Y - Yes, N - No) [16]

17. Enter the code from the following list that best describes the building. [17]

Schools
- Elementary 11
- Secondary 12
- College or University 13
- Vocational 14
- Local education agency administrative building 15
- Other (specify) 16

Hospitals
- General 21
- Tuberculosis 22
- Other (specify) 23

Local government buildings
- Office 31
- Storage 32
- Service 33
- Library 34
- Police station 35
- Fire station 36
- Other (specify) 37

Public care buildings
- Nursing home 41
- Long-term care — other than a nursing home 42
- Rehabilitation facility 43
- Public Health Center 44
- Residential child care center 45

18. Enter a code from the following list if the building is owned by one of the following. [18]
- Public institution 1
- Private nonprofit institution 2
- Indian tribe 3

19. Enter the square footage of all heated or cooled floor areas enclosed in the building. Calculate square footage from the outside building dimensions, or from the centerline of common walls. [19]

20. Enter the number of heated or cooled stories in the building. [20]

21. Enter the code from the following list that best describes the building shape. (Looking down from above the building) [21]

Square 1	H shaped 4
Rectangular 2	L shaped 5
E shaped 3	Other (specify) 6

22. Enter the code from the following list that best describes the roof of the building. [22]

Flat roof 1
Pitched roof facing South 2
Pitched roof not facing South 3

23. Check the boxes that best describe any rooftop structures.

	[23]
Chimneys	☐
Space conditioning equipment	☐
Water towers	☐
Mechanical rooms	☐
Stairwells	☐
Other structures (specify)	☐

24. Enter the year that the building was first placed in service. [24] ☐☐☐☐

25. From each of the following lists enter one code that best describes the building structure.

Foundation [25a] ☐☐

Concrete 11
Wood 12
Stone 13
Concrete block 14

Roof [b] ☐☐

Wood shakes 21
Slate 22
Metal 23
Built-up 24
Asphalt shingles 25
Fibre glass 26
Felt 27
Decking 28

Floor [c] ☐☐

Wood 31
Concrete 32
Marble 33
Metal 34

Ceiling [d] ☐☐

Concrete 41
Metal 42
Sheet rock 43
Plaster 44
Open 45
Wood 46
Lay in 47

Interior Walls [e] ☐☐

Tile 50
Metal 51
Glass 52
Sheet rock 53
Brick 54
Block 55
Stone 56
Wood 57
Plaster 58
Concrete 59

Southern Exterior Walls [f] ☐☐

Stone 61
Brick 62
Concrete 63
Concrete block 64
Stucco 65
Wood 66

Enter the code from the following list that best describes what proportion of the southern facing wall is glass. 26

0 to 25 percent....1
25-75 percent....2
75-100 percent....3

Enter the approximate number of hours that the building is operated daily, including periods of partial use if applicable. 27

Enter the number of weeks per quarter that the building is in use. 28

Enter the code from the following list that best describes the type of heating system in the building. 29

Steam boiler(s)....1
Hot water boiler(s)....2
Modular steam boiler(s)....3
Modular hot water boiler(s)....4
Forced air furnace....5

Enter the code from the following list that best describes the type of fuel used to run the heating system in the building. 30

Electricity....1
Natural gas....2
Fuel oil....3
Coal....4
Propane....5
Butane....6
Other....7

If the building has a central air conditioning system, enter the code that best describes the system. 31

Electric reciprocating....1
Electric centrifugal....2
Absorption....3
Compressor driven by steam turbine....4

Enter the code from the following list that best describes how domestic hot water is heated. 32

Heated by electric heater(s)....1
Heated by gas heater(s)....2
Heated by oil heater(s)....3
Heat exchanger from the boiler(s) only source of domestic hot water....4

Check the boxes that best describe any special energy using systems in the building. 33

Food service....
Laundry service....
Computer....
Elevator....
Laboratory....
Library....
Other (specify)....

34. Enter the code from the following list that best describes any energy use study that has been conducted in the building. 34 ☐

Walk through energy audit covering operational and maintenance procedures by an auditor other than an engineer....1

Detailed energy use study conducted by an engineer....2

Detailed energy use study conducted by an engineer including feasibility of renewable energy systems (such as solar)....3

Other types of energy use studies (specify)....4

35. Enter the code that best describes the location of the heating system. 35 ☐

Outside the building....1
Within the building on the ground floor....2
Within the building in the basement....3
On the roof of the building....4

36. If the heating system is within the building, enter the code from the following list that best describes the type of heating system. 36 ☐

Centrally located....1
Multiple units....2
Central and multiple units....3

37. If more than half of the building's roof area or southern facing wall surface is heavily shaded by trees, buildings or other obstructions, enter the number of hours per day that these areas are shaded. 37 ☐☐

38. If unshaded open land such as fields, yards, parking areas etc. is available within the immediate vicinity of the building, list the approximate square footage of these areas. 38 ☐☐☐☐☐☐☐☐

39. If any major energy conservation measures have been implemented in the building, check the boxes that best describe the measures.

Wall or roof insulation.... 39 ☐
Storm windows.... ☐
Air intake controls.... ☐
Thermal drapes.... ☐
Vestibule doors.... ☐
Caulking and weatherstripping.... ☐
Other (specify).... ☐

Send to:

MONTANA DEPARTMENT OF NATURAL RESOURCES & CONSERVATION
ENERGY DIVISION
HELENA, MONTANA 59601
32 SOUTH EWING
406/449-3940
DNRC

MONTANA ENERGY CONSUMPTION SHEET

ANNUAL CONSUMPTION 19___

Building ID	Energy Coordinator	Department	
Street Address		Division	
City	State / Zip	Bureau	
Building Name		Completed By	Phone

MONTH	Electricity		Natural Gas		Propane/Butane		Fuel Oil		Coal		Condensate		Water	
	KWH	*Date	MCF	*Date	Gallons	*Date	Gallons	*Date	Tons	*Date	Gallons	*Date	Gallons	*Date
01		/	.	/		/		/	.	/		/		/
02		/	.	/		/		/	.	/		/		/
03		/	.	/		/		/	.	/		/		/
04		/	.	/		/		/	.	/		/		/
05		/	.	/		/		/	.	/		/		/
06		/	.	/		/		/	.	/		/		/
07		/	.	/		/		/	.	/		/		/
08		/	.	/		/		/	.	/		/		/
09		/	.	/		/		/	.	/		/		/
10		/	.	/		/		/	.	/		/		/
11		/	.	/		/		/	.	/		/		/
12		/	.			/		/	.	/		/		/

*Date of Meter Reading (Indicate Month/Day only)

Form -001/77E

APPENDIX B

STEP 2: PHASE I

ENERGY AUDIT

WORKBOOK

FOR

THE MONTANA INSTITUTIONAL BUILDINGS GRANTS PROGRAM

DEPT. OF NATURAL RESOURCES & CONSERVATION
CONSERVATION BUREAU
ENERGY DIVISION
32 SOUTH EWING
HELENA, MONTANA 59601

PHONE NO. 449-3940

FOREWORD

The Energy Audit Workbook has been prepared by the Montana DNRC, Energy Division, for use in the Montana Institutional Buildings Grants Program, authorized by the National Energy Act of 1978. The program is designe to encourage, through the awarding of feder matching grants, energy conservation improvements in buildings owned by schools, hospitals, public care institutions, and local governments.

The workbook is based on a publication entitled: "Making Sense of Your Energy Dollar," prepared for the U. S. Department of Energy.

The Montana Institutional Buildings Grants Program is managed by the Montana DNRC Energy Division. The program is funded, in part, by the U. S. Department of Energy. Matching funds are provided by the State of Montana and eligible institutions.

While recommendations contained in this workbook have been reviewed for technical accuracy, the Montana DNRC Energy Division and the U.S. Department of Energy are not liable if potential cost savings identified as a result of using this workbook are not actually achieved. None of the above agencies endorse or recommend the use of any specific brand of equipment which may be represented in this workbook.

TABLE OF CONTENTS

The Energy Audit Workbook has been designed for use by certified energy auditors in auditing eligible buildings under the Montana Institutional Buildings Grants Program. It is a non-technical guide to identifying and correcting energy consumption inefficiencies in building systems. Auditors who use this workbook under the grants program are required to have been trained in its use by the Montana DNRC Energy Division. **One workbook should be used for each building audited under the program.**

Completion of this workbook and the mailing of a copy to the Montana DNRC Energy Division may qualify the institution for federal matching funds to cover the costs incurred in auditor training and in completion of the Energy Audit Workbook. Also, completion and mailing a copy makes an institution eligible to apply for a federal grant covering the cost of a detailed engineering audit, referred to as "technical assistance" under federal rules, of the building covered in the workbook. In the case of school and hospital buildings, grants are available for the acquisition of energy conservation retrofit measures (insulation, furnace modifications, solar hot water heating equipment, etc.) after a detailed engineering audit is performed.

The workbook includes a step-by-step process for conducting an energy audit and serves as a guide for implementing and monitoring a comprehensive energy management program. The Energy Audit Checklist (Step 2 — Option B) identifies simple, low- or no-cost energy-saving operation and maintenance procedures, called ***O & M's***. The checklist also includes more expensive energy-saving measures for specific problems. These are identified as ***Retrofits***.

Steps 3 & 4

Complete the Evaluation of Potential for Energy Conservation Measures, and Evaluation of Potential for Solar and Renewable Resource Measures as per the instructions included with each step. This data is utilized for comparisons between Energy Audits. Therefore the weighting factors (WFs) are to be determined as accurately as possible.

Step 5

Complete the calculations and the summary tables for potential energy savings in accordance with the instructions included with this step (page #37).

Guidelines for Completing Energy Audit Workbook

Step 1

Complete the Building Energy Consumption Survey. Th will give you a basic run-down of what type of energy systems exist in the building, how much fuel is used, wh kind of fuel is used, and what the building's potential is fo solar or other renewable energy resource systems. Instructions are included in this step.

Step 2 — Option A

Complete the Achieved Energy Savings Computation *(Instructions are included in this step.)* if an energy conservation program already is in effect for the buildin being audited. Buildings which can show a 20 per cent savings of energy in accordance with this step must list a ***O & M's*** and ***Retrofits*** undertaken to accomplish these savings. *(You can use the Energy Audit Checklist as a guide.)* Then, skip Step 2 — Option B, and go on to Ste 3. If a 20 percent savings cannot be shown, you must complete Step 2 — Option B, the Energy Audit Checklis

Step 2 — Option B

Complete the Energy Audit Checklist. The 62 items liste in the checklist cover common energy consumption inefficiencies found in eight basic energy systems: Administrative *(the operation and use of the building by people)*, Lighting, Building Envelope, Ventilation, Heating, Cooling, Water Heating and Special. The letter used in the checklist numbering system indicates which the eight systems each item is in (A-1, V-3, S-4, etc.). Th auditor should walk through the building and determine whether each of the 62 checklist conditions exist or not. Indicate by checking either the "Yes" or "No" box under the "EXISTS" column on the right of the page. Then, check either the "Yes," or "No" box under the "RECOMM." column on the far right of the page for eac listed ***O & M*** or ***Retrofit*** you, as the auditor, recommend be implemented. Once you have gone through all items in the Energy Audit Checklist, complete Step 3.

Step 6

Complete the Auditor Certification Form in full to indicate that the building was audited by someone trained under the Institutional Buildings Grants Program by the Montana DNRC Energy Division in accordance with the program rules. This certification is a critical eligibility requirement for engineering audit or conservation measure retrofit grants. Now, complete Step 4.

Step 7

Photocopy the entire Energy Audit Workbook and send the complete copy to the Montana DNRC Energy Division. This step is required to verify the building's eligibility for additional grants and to obtain energy consumption data on Montana buildings.

Step 1: Building Energy Consumption Inventory

Please answer all questions, and provide only answer(s) requested.

FOR OFFICE USE ONLY

#	REG

SECTION I: BUILDING IDENTIFICATION

(Please print clearly)

1. BUILDING NAME	2. INSTITUTION NAME
3. BUILDING ADDRESS *(Street, City, County, Zip Code)*	
4. CONTACT PERSON	PHONE
5. NAME OF LEGAL OWNER *(If different than #2 above)*	ADDRESS OF LEGAL OWNER *(Street, City, County, State, Zip Code)*
6. OWNERSHIP CATEGORY *(Circle appropriate code of legal owner)* 1 Public 2 Private Non-Profit 3 Indian Tribe	7. BUILDING TYPE *(Circle one only)* 1 School 2 Hospital 3 Public Care Institution 4 Local Government

8. BUILDING FUNCTION *(Circle one only)*

SCHOOL
1 Elementary
2 Secondary
3 College or University
4 Vocational
5 Local Educational Agency Administration Building
6 Other (Specify)

HOSPITAL
7 General
8 Tuberculosis
9 Other (Specify)

PUBLIC CARE INSTITUTION
10 Nursing Home
11 Long Term Care — Other than Nursing Home
12 Rehabilitation Facility
13 Public Health Center
14 Residential Child Care Center
15 Other (Specify)

LOCAL GOVERNMENT
16 Office
17 Storage
18 Service
19 Library
20 Police Station
21 Fire Station
22 Other (Specify)

SECTION II: BUILDING CHARACTERISTICS

9. GROSS SQUARE FEET (Enter the square footage of all heated or cooled floor areas enclosed in the building. Calculate square footage from the outside building dimensions, or from the center line of common walls, if building is attached to another building.)

a. _____ Total Gross Square Footage

b. _____ Gross Square Feet Heated

c. _____ Gross Square Feet Cooled

10. Glass Area Total Area_____Sq. Ft.

Single Pane_____Sq. Ft.
Double Pane_____Sq. Ft.

	NORTH	SOUTH	EAST	WEST
Total Area	_____Sq. Ft.	_____Sq. Ft.	_____Sq. Ft.	_____Sq. Ft.
Single Pane	_____Sq. Ft.	_____Sq. Ft.	_____Sq. Ft.	_____Sq. Ft.
Dbl Pane	_____Sq. Ft.	_____Sq. Ft.	_____Sq. Ft.	_____Sq. Ft.

11. Exterior Wall

Total Area_____Sq. Ft. U_w_____Btu/hr/sq.ft./°F

South Wall Area_____Sq. Ft.

12. Roof

Total Area_____Sq. Ft.

U_R_____Btu/hr/sq.ft./°F

13 **NUMBER OF STORIES** *(Enter the number of stories in this building. Do not count basement, if unoccupied.)*

14 **LAST MAJOR ADDITION** *(Enter the year of the last major addition to the building, if any.)*

15 **YEAR** *(Enter the year building was first placed into service.)*

16 **LOCATION** *(Circle the number which best describes the location of the building.)*

1 Urban 2 Suburban 3 Rural

17 **FUNCTIONAL USE CHANGES** *(Circle the number(s) from the following list that describes major changes planned in functional use or mode of operation in the next fifteen (15) years, if any.)*

0 None
1 Demolition
2 Disposal
3 Rehabilitation
4 Conversion (e.g. from office to warehouse) (Specify)
5 Other (Specify)

18 **ANNUAL OPERATING HOURS**
(Enter the approximate number of hours and days that the building is normally operated.)

Daily hours of operation	X	Days per week	=	Total hours per week

WEEKLY NON — OR LIMITED — USE PERIODS
(Enter the number of weekly periods of non-use or limited-use by quarter.)

JAN-MAR	APR-JUN	JUL-SEP	OCT-DEC	Total # Weeks

ANNUAL OPERATING HOURS
Calculate the total of annual operating hours as follows:

Total hours per week	X	(52 – total # of weeks of non-use or limited-use)	=	**Annual Operating Hours**

19. Average Occupancy

_____ Number of People

(Hospital & Nursing Homes – number of occupied beds)

20 **BUILDING CONDITIONS** *(Circle the number that best describes general building conditions. Please include a brief explanation.)*

1 Excellent
2 Good
3 Fair
4 Poor

Brief Explanation

SECTION III: ENERGY CONSERVATION ACTIVITIES

21 **ENERGY MONITOR** *(Circle yes if a person has been designated to monitor and evaluate energy use in the building.)*
1 Yes 2 No

If yes, enter

Name	Position	Phone

22 **ENERGY AUDIT INFORMATION** *(Circle the number that best describes activities which have been undertaken to date to conserve energy in the building, if any.)*

1 No activities have been undertaken to date

2 A partial energy audit has been completed indicating energy conservation opportunities in the building (not performed by an engineer and/or architect)

3 A complete energy audit has been completed indicating energy conservation opportunities in the building (not performed by an engineer and or architect)

4 Detailed studies have been completed by engineers and/or architects indicating energy conservation opportunities in the building

5 Detailed studies have been completed by engineers and/or architects indicating energy consumption opportunities in the building including feasibility of renewable resources such as solar

23 **PLEASE LIST MAJOR ENERGY CONSERVATION MEASURES WHICH HAVE BEEN IMPLEMENTED IN THE BUILDING, IF ANY.**

MEASURE	COST	ANNUAL ENERGY SAVINGS
Example: Additional roof insulation	*$2400*	*2500 CCF Natural Gas*

SECTION IV: COMPLEX

24 **COMPLEX** *(Indicate whether or not this building is part of a complex in which hot water, steam, or chilled water is supplied from a central power plant.)*

(Circle One) 1 Yes 2 No

If **YES**, please complete Section V only for this building. Annual consumption figures should be calculated for the entire complex and then allocated to this building based on the gross square footage of this building compared to total square footage of all buildings served by the central plant

If **NO**, continue on to Section V

SECTION V: ANNUAL ENERGY CONSUMPTION

(Information for this section can be obtained by completing the energy consumption worksheet – see instructions)

FUEL TYPE	ANNUAL USE	x	CONVERSION FACTOR	=	ANNUAL BTU	ANNUAL COST
1. ELECTRICITY	Kwh	x	11.600	=		$
2. NATURAL GAS	CCF	x	103.000	=		$
	Therm	x	100.000	=		$
3. FUEL OIL #2	Gal	x	138.690	=		$
4. FUEL OIL #6	Gal	x	149.690	=		$
5. COAL	Tons	x	24.500.000	=		$
6. LPG (PROPANE)	Gal.	x	95.475	=		$
7. PURCHASED STEAM	Lbs	x	1.390	=		$
8. OTHER (SPECIFY)		x		=		$
						$

25 **BTU PER GSF** *(Divide total annual BTU by GSF from # 9.)*

26 **COST PER GSF** *(Divide total annual cost by GSF from # 9.)*

2.7 **ELECTRICAL DEMAND DATE** *(Answer only if your electric utility bills you on a demand rate. Enter the highest measured electrical demand and the month for which it was recorded)*

Highest measured demand	Measured in month of

ENERGY CONSUMPTION WORKSHEET

MONTH	ELECTRICITY			NATURAL GAS		FUEL OIL		OTHER	
	KWH	Demand KW if known	Cost	Therms or CCF	Cost	Gallons	Cost	Units	Cost
TOTALS									

INSTRUCTIONS:

1. Assemble all your energy bills — electricity, gas, oil and the like, for the most recent 12-month period possible. If you're missing some of your bills, contact the billing department of the utilities from which you buy and ask them for copies. Many utilities will provide, at no cost, a computer printing of your energy consumption during the previous 12-month or 14-month time period. (Example: Public Service Company offers this service to their electric, natural gas and steam customers.)

2. Record the amount of your monthly energy use and cost on the energy consumption worksheet. Your usage will be expressed on the bill in one of the ways listed below. There are two columns for each of the three major fuels listed below, plus a space for other fuels, if needed.

Fuel	Units
Electricity	Kilowatt hours (KWH)
Natural Gas	Therms (100,000 BTU's) or Cubic Feet x 100 (CCF)
Oil	Gallons (Gal.)
Coal	Tons
LPG (Propane)	Gallons (Gal.)
Purchased Steam	Pounds (Lbs.)

Use the correct unit to express any fuels listed in the other column.

3. Total both energy use and cost for the reporting period for every fuel type consumed and transfer that information to Section V.

SECTION VI: MAJOR ENERGY SYSTEMS
(Circle the number(s) that describes each of the following systems and fuels in the building.)

28 PRIMARY HEATING SYSTEM(S)
1 Hot water or steam supplied from central plant
2 Steam boiler
3 Hot water boiler
4 Radiant (baseboard)
5 Heat pump
6 Forced air
7 Solar
8 Other (Specify)

29 HEATING FUEL(S)
1 Electricity
2 Natural gas
3 Fuel oil #2
4 Fuel oil #6
5 Coal
6 LPG (propane)
7 Solar
8 Other (Specify)

30 DOMESTIC HOT WATER SYSTEM(S) *(Circle the number that describes how domestic hot water is heated.)*
1 Hot water or steam supplied from central plant
2 Electricity
3 Natural gas
4 Fuel oil #2
5 Fuel oil #6
6 Coal
7 LPG (propane)
8 Solar
9 Other (Specify)

31 COOLING SYSTEM(S)
0 None
1 Chilled water supplied from central plant
2 Chilled water — centrifugal
3 Chilled water — absorption
4 Refrigeration — electric compressor — water cooled
5 Refrigeration — electric compressor — air cooled
6 Refrigeration — steam turbine compresor
7 Evaporative cooling unit
8 Other (Specify)

32 COOLING FUEL(S)
0 None
1 Electricity
2 Natural gas
3 Fuel oil #2
4 Fuel oil #6
5 Coal
6 LPG (propane)
7 Solar
8 Other (Specify)

33 TERMINAL SYSTEM(S)
1 Unitary (rooftop, furnace, unit heater, etc.)
2 Perimeter — hot water
3 Perimeter — heated air
4 Variable air volume
5 Dual duct
6 Terminal reheat
7 Heat pump
8 Other (Specify)

34 LIGHTING SYSTEM(S)
1 Fluorescent
2 Incandescent
3 Mercury vapor
4 Metal halide
5 High pressure sodium
6 Low pressure sodium
7 Other (Specify)

35 OTHER ENERGY USING SYSTEM(S) *(Circle the number(s) that describe any other energy using systems in the building.)*
0 None
1 Food service
2 Laundry service
3 Major computer systems
4 Special diagnostic equipment
5 Swimming pool
6 Other (Specify)

36. HEATING SYSTEM LOCATION *(Circle the number that best describes the location of the primary heating system.)*
1 Outside the building
2 Within the building on the ground floor
3 Within the building in the basement
4 On the roof
5 Other (Specify)

(If the heating system is within the building or on the roof, circle the number from the following list which best describes the type of heating system.)
6 Centrally located
7 Multiple units
8 Central and multiple units

37. DOMESTIC HOT WATER HEATING SYSTEM(S) LOCATION
(Circle the number(s) that best describes the location of the domestic hot water systems.)

1. Outside the building
2. Within the building on the ground floor
3. Within the building in the basement
4. On the roof
5. Other (specify)

(If the water heating system is within the building or on the roof, circle the number from the following list which best describes the type of domestic hot water system.)
6. Centrally located
7. Multiple units
8. Central and multiple units

38. TOTAL HORSEPOWER OF ALL AIR MOVING DEVICES

a. Exhaust Fans _____HP
b. All HVAC, HV, AC, and ventilating units_____HP

Total HP_____

39. If the primary heating system #28 is forced air, and/or if the terminal system #33 is other than perimeter radiation; then the total supply CFM of the HV and/or AC system is _____CFM.

40. The minimum % of outside air brought into the building through the HV and/or AC system is _____CFM.

SECTION VII: ENERGY SYSTEMS SPECIAL SYSTEMS

41. LAUNDRY (Commercial Size Only) ☐ Yes ☐ No

Enter Fuel Type: N.G.= Natural Gas, E = Electricity

Washing Data:			Drying Data: (Btu/H)			
No. of Washers	Washer Capacity	Total Weekly Loads	No. of Dryers	Rating Each	Total Weekly Loads	Fuel Type
1.			1.			
2.			2.			
3.			3.			
4.			4.			
5.			5.			
6.			6.			

42. FOOD PREPARATION ☐ Yes ☐ No

On the following chart, check the kitchen equipment used in food preparation and storage. Where possible, record information from equipment name plates. Use the "comments" column to note general condition and equipment.

FOOD SERVICE EQUIPMENT

	A	B	C	D	E	F
DESCRIPTION	NUMBER OF UNITS	NAME PLATE INFORMATION (KILOWATTS, BTUs/HR)	HOURS OPERATED DAILY	DAYS/YR IN USE	ANNUAL CONSUMPTION (KWH OR BTU) AxBxCxD	ADDITIONAL COMMENTS
RANGES						
OVENS						
STEAM TABLES						
FRYING TABLES						
FREEZERS						
REFRIGERATORS						
INFRA-RED WARMERS						
DISHWASHERS						
MICROWAVES						
HOODS WITH EXHAUST FANS						
MIXERS						

43. DOMESTIC WATER HEATING

Average Daily Hot Water Consumption

Dormitory	13 gal/student
Hospital & Nursing Home	18 gal/bed*
Elementary School	1 gal/student*
Jr.& Sr. High School	2 gal/student*
Office Building	1 gal/person
Laundry, Commercial Size	3x rated washer cap x 1.2 gal/lb/HR
Food service	2.4 gal/meal/day

*includes food service

Annual Water Heating Btu's

Occupants Gal/Day Days/Yr

_____ x _____ x _____ = _____Gal/Yr

Gal/Yr Present hot water temp. Cold water Temp.

_____ x 8.3 x (_____^{o}F - _____) = _____Annual Btu

44. OTHER ☐ Yes ☐ No

Describe briefly:_____

SECTION VIII ELECTRICAL ENERGY CONSUMPTION OF BUILDING SYSTEMS

(This section attempts to estimate the electrical energy being consumed in the building by lighting the HVAC system, and special systems.)

45 **LIGHTING** *(Select representative rooms in the building and calculate the watts per square foot for each. Select at least 4 rooms, 5 or 6 if the building has many uses. Using this information and information calculated previously, calculate watts per square foot for the entire building and the annual electrical consumption (KWH) by lighting as follows.)*

	Watts per fixture	x	# of fixtures	=	Total watts	÷	Square footage of room	=	Watts/ft²
ROOM #1									
ROOM #2									
ROOM #3									
ROOM #4									
ROOM #5 (OPTIONAL)									
ROOM #6 (OPTIONAL)									

Total watts ft² of rooms	÷	Number of rooms	=	Average watts/ft²

TOTAL WATTS/FT² OF ROOMS

Gross square feet (see 9.)	x	Ave. watts/ft²	=	Total watts	– 1000	=	Total KW

Utilization factor percent of usage. I usage is 20% utiliz tion will be .2

Total KW	x	Annual operating hours (see 18)	x	Utilization Factor	=	Annual KWH-lighting

Annual K Exterior Lighting

46 EXTERIOR LIGHTING: Total kw_____ x annual operating hrs = [ ]

47 **SPECIAL SYSTEMS** *(List all energy consuming equipment in the building other than lighting and equipment that is a part of the HVAC System. Examples: Kitchen equipment, laundry equipment, electric water heaters, diagnostic equipment, treatment equipment, computers, elevators, kilns, etc. For each, calculate annual KWH. The sum of these figures will equal total KWH for special systems in the building.)* (See Section VII)

LIST OF SPECIAL EQUIPMENT	KW RATING	x	ANNUAL HOURS OF USE	=	ANNUAL KWH
			ANNUAL KWH — SPECIAL SYSTEMS		

48 **HVAC SYSTEM** *(Calculate the electrical energy being consumed by fans, pumps, compressors, etc. as follows.)*

Annual KWH — lighting (add 45 & 46)	+	Annual KWH — special systems (see 47)	=	Total KWH — non-HVAC

Total KWH (see Section V)	–	Total KWH — non-HVAC	=	Annual KWH — HVAC

49 PERCENTAGES *(Calculate the percentage of total annual KWH represented by lighting, special systems, and the HVAC System as follows.)*

1. LIGHTING	Annual KWH — lighting	÷	Annual KWH — total	x 100	=	%
2. SPECIAL SYSTEMS	Annual KWH — special systems	÷	Annual KWH — total	x 100	=	%
3. HVAC SYSTEM	Annual KWH — HVAC	÷	Annual KWH — total	x 100	=	%

SECTION IX NON-ELECTRICAL ENERGY CONSUMPTION OF BUILDING SYSTEMS

(This section attempts to estimate the energy, other than electrical energy, being consumed in the building for heating and for other purposes. Refer to the energy consumption worksheet for consumption data.)

50 BASE LOAD BTU's *(This term refers to the level of non-electrical energy consumption in the building during periods when the heating system is not being used. Only heating fuels, and not electrical energy, should be included in this calculation. Use the conversion factors from Section V.)*

1. Total BTU's—June	+	Total BTU's—July	+	Total BTU's—August	x 4	=	**Base load BTU's**	

ALTERNATIVE *(if the building is characterized by A or B below, calculate base load BTU's as follows:)*

A. The building is not fully occupied during all or most of June, July and August, such as is common with school buildings, or

B. The building utilizes a steam-driven central air conditioning system.

2. Total BTU's—September	x 12	=	**Base load BTU's**	

51 NON-ELECTRICAL ENERGY CONSUMPTION FOR HEATING *(Only heating fuels, and not electrical energy, should be included in this calculation. Use the conversion factors from Section V.)*

Annual non-electrical BTU's	–	Base load BTU's	=	**Annual heating BTU's**

52 PERCENTAGES *(Calculate the percentage of annual non-electrical BTU's represented by base load BTU's and annual heating BTU's as follows:)*

1. BASE LOAD BTU'S	Base load BTU's	÷	Annual non-electrical BTU's	x 100	=	%
2. ANNUAL HEATING BTU'S	Annual heating BTU's	÷	Annual non-electrical BTU's	x 100	=	%

SECTION X TOTAL ENERGY CONSUMPTION OF BUILDING SYSTEMS

(This section attempts to estimate the total energy consumed in the building by lighting, special systems, HVAC electrical, base load, and heating.)

53 TOTAL ENERGY CONSUMPTION *(Convert energy consumption (KWH) to BTU's and determine the total energy consumption of building system as follows:)*

LIGHTING	Annual KWH — lighting (add 45 & 46)	x 3,413	Annual BTU's — lighting
SPECIAL SYSTEMS	Annual KWH — special systems (see 47)	x 3,413	Annual BTU's — special systems
HVAC ELECTRICAL	Annual KWH — HVAC systems (see 48)	x 3,413	Annual BTU's — HVAC electrical
BASE LOAD			Annual base load BTU's (see 50)
HEATING			Annual heating BTU's (see 51)
		TOTAL ENERGY (BTU's)	

54 PERCENTAGES *(Calculate the percentage of total energy represented by the annual BTU consumption for lighting, special systems, HVAC electrical, base load, and heating as follows:)*

1. LIGHTING	Annual BTU's — lighting	÷	Total energy (BTU's)	x 100	=	%
2. SPECIAL SYSTEMS	Annual BTU's — special systems	÷	Total energy (BTU's)	x 100	=	%
3. HVAC ELECTRICAL	Annual BTU's — HVAC electrical	÷	Total energy (BTU's)	x 100	=	%
4. BASE LOAD	Annual base load BTU's	÷	Total energy (BTU's)	x 100	=	%
5. HEATING	Annual heating BTU's	÷	Total energy (BTU's)	x 100	=	%

Step 2: Energy Savings Recommendations

This step can be completed in one of two ways:

Option A

Demonstrating that appropriate energy conservation operation and maintenance procedures already have been implemented in the building, resulting in energy savings of 20 percent or more based on annual energy consumption records. This savings can be determined by filling out the Achieved Energy Savings Computation in this workbook.

Option B

Completing an on-site inspection of the building to identify conditions that result in wasted energy, and to indicate energy savings potential through operation and maintenance procedures and possible energy conservation retrofits. The Energy Audit Checklist in this workbook is to be used for this option.

Step 2/Option A: Achieved Energy Savings Computation

This option should be completed for buildings which already have been scrutinized for energy conservation opportunities, and which can demonstrate significant energy savings resulting from such an energy conservation program. If the building has not yet undergone such scrutiny, go on to Step 2 / Option B and complete that section instead.

Also, if this option is completed, but 20 percent or greater energy savings cannot be shown, or if such savings can be demonstrated only for ineligible comparison years, go on to Step 2 / Option B and complete it.

Computation of Energy Savings

The percentage of energy savings resulting from an energy conservation program in which appropriate operation and maintenance procedures or retrofit steps have been implemented in the building must be calculated as follows:

A. Energy Use — Before Program
Calculate the total number of BTU's consumed in the building during the annual period from Jan *through* Dec *prior to the completion of an energy conservation program. Use energy conversion factors specified in Step 1, the Building Energy Consumption Inventory. Record this total consumption figure in the blank below.*

Time period Jan _____ through Dec _____

Energy Use — Before: _____ BTU's

B. Energy Use — After Program
Calculate the total number of BTU's consumed in the building during an annual period from Jan *through* Dec *after completion of an energy conservation program. Use energy conversion factors specified in Step 1, the Building Energy Consumption Inventory. Record this total consumption figure in the blank below.*

Time period Jan _____ through Dec _____

Energy Use — After: _____ BTU's

C. Energy Savings
Calculate energy savings resulting from that energy conservation program by subtracting ***Energy Use — After*** *from* ***Energy Use — Before*** *and record the figure in the blank below.*

Energy Savings: _____ BTU's

D. Energy Savings Percentage
Calculate energy savings percentage as follows:

_____ (Energy Savings) ÷ _____ (Energy Use — Before) × 100 = _____ %

Energy Conservation Operation and Maintenance Procedures, and Retrofits
List all operation and maintenance procedures, plus any other energy conservation retrofit measures, that have been implemented in the building as a part of the energy conservation program.

Heating Degree Day Variance Calculation

Federal rules specify that the demonstration of energy savings of 20 percent or greater is valid only when the yearly periods being compared have a heating degree-day (DD) variance of less than 10 percent. If the comparison period after the energy conservation program is more than 10 percent warmer than the comparison period before the energy conservation program, the demonstration of energy savings percentage is not valid. In such a situation, a different comparison period should be used, if this is possible.

Montana heating degree-day readings are obtained from stations located near most municipalities throughout the state. Readings are totaled for annual heating degree-day values.

If the location of the building being audited is not available, use the values for the municipality closest to the building.

A. HEATING DEGREE-DAY VALUES
Transfer the heating degree-day values for the two annual periods compared in the previous section.

DD Before Program_____

DD After Program_____

DEGREE-DAY VARIANCE DETERMINATION
If degree-days AFTER are greater than degree-days BEFORE, no calculation is required because the comparison periods are valid automatically. If degree-days AFTER are less than degree-days BEFORE, calculate the degree-day variance as follows:

_____	–	_____	=	_____
Degree-Days Before		Degree Days After		Degree-Day Variance

_____	÷	_____	x100=	_____ %
Degree-Day Variance		Degree Days Before		

	EXISTS Yes	EXISTS No	RECOM Yes	RECOM No
Administrative System				
A-1. Thermostats on heating/cooling units are vulnerable to occupant adjustment.	☐	☐		
Suggested O & M's:				
• Reset Thermostats to correct settings.			☐	☐
• Install or replace locking screws to prevent tampering.			☐	☐
Suggested Retrofits.				
• Install tamper-proof locking covers on thermostats.			☐	☐
• Install pre-set solid state electric thermostats if existing controls are electric.			☐	☐
• Relocate thermostats in return air ducts where they will be inaccessible to occupants.			☐	☐
A-2. Thermostat settings have not been adjusted for change in seasons.	☐	☐		
Suggested O & M's:				
• Adjust thermostats to 65° F in heating season and to 78° F during cooling season.			☐	☐
* • Change the location of thermostats from areas subject to extreme temperature fluctuations, such as next to windows, or over a heating or cooling unit.			☐	☐
Suggested Retrofits:				
• Replace existing thermostat with one that has a separate setting for cooling and a separate setting for heating, or use one thermostat to control heating and another thermostat to control cooling.			☐	☐
A-3. Unoccupied or little used areas which are heated or cooled unnecessarily.	☐	☐		
Suggested O & M's:				
• Reduce winter thermostat settings to 55° F in unoccupied areas.			☐	☐
* • Where possible, turn off heating systems if nothing in space can freeze.			☐	☐
• Use spot heaters/coolers in large spaces with low occupancy.			☐	☐
• Turn off cooling systems in unoccupied areas, if possible.			☐	☐
* • Disconnect electrical devices, close drapes, and shut off air systems, if nothing in space can freeze.			☐	☐
Suggested Retrofits:				
• Install system controls to reduce heating/cooling of unoccupied spaces.			☐	☐
A-4. Off-hour activities are scheduled.	☐	☐		
Suggested O & M's:				
• Reschedule off-hour activities to accommodate partial shutdown of building systems.			☐	☐
• Reschedule custodial and cleaning activities during working hours whenever possible.			☐	☐
• Re-examine original assumptions regarding occupancy patterns and building usage. Modify patterns for increased energy efficiency.			☐	☐
Suggested Retrofits:				
• Install an automated energy management system that will control all spaces in accordance with usage.			☐	☐
A-5. Building temperatures are not adjusted for unoccupied periods.	☐	☐		
Suggested O & M's:				
• Reduce thermostat settings by a minimum of 10° F at nights, for weekends and holidays during heating season.			☐	☐
• Shut down all air conditioning units at night, on weekends and holidays.			☐	☐
Suggested Retrofits:				
• Install automatic controls such as time clocks or automated management systems.			☐	☐

An asterisk (*) means that the implementation of the suggested "O & M", if checked, may require special training for maintenance or operating personnel, or create other overriding circumstances that make implementation impractical.

	EXISTS Yes	EXISTS No	REQ Yes
A-6. Heating/cooling equipment is operating in lobbies, corriders, vestibules and/or other public areas.	☐	☐	
Suggested O & M's:			
* • Close supply ducts and radiators and/or lower heating set points in the above areas if there is no possibility of freeze-up. Disconnect electrical heating units *(or switch off at breaker box).*			☐
• Close air conditioning supply ducts serving the above areas.			☐
Suggested Retrofits:			
• Properly adjust and balance air/water systems and controls.			☐
A-7. Heating/cooling equipment is started before occupants arrive and/or is operating during last hour of occupancy.	☐	☐	
Suggested O & M's:			
• Experiment with start-up times and duration of operation to determine satisfactory comfort levels for occupants. Reduce or turn off heating and cooling during the last hour of occupancy, allowing the building to "coast".			☐
Suggested Retrofits:			
• Install a time clock or an automated energy management system that will reduce heating and/or turn off air conditioner.			☐
A-8. Use of equipment associated with laundry and custodial services coincides with heavy electrical demand periods.	☐	☐	
Suggested O & M's:			
• Require that major electrical equipment be used in accordance with guidelines that avoid peak electrical demand periods.			☐
Suggested Retrofits:			
• Install a demand control system to automatically monitor power demand and shut off assigned secondary loads to lower demand peaks to pre-established level.			☐
A-9. Blinds and curtains are not used to help insulate the building.	☐	☐	
Suggested O & M's:			
• Instruct personnel to close interior shading devices to reduce night heat loss in winter and to reduce solar heat gain during the summer.			☐
• Repair or replace damaged or missing shading devices.			☐
• Place reminders where appropriate.			☐
Suggested Retrofits:			
• Add reflective or heat absorbing films to reduce solar heat gain in summer. *(Caution: Natural lighting and solar heat gain in winter will be reduced. Also, unless protected by an additional layer of glass, these films are subject to damage.)*			☐
• Install outdoor shading devices.			☐
A-10. No records of maintenance for motors and motor driven equipment are available.	☐	☐	
Suggested O & M's:			
• Using name plate data, prepare an up-to-date list of all motors and pumps used in the facility and list routine maintenance to be performed on each. Check regularly for:			☐
1. Correct motor voltage and amperage. 2. Loose connections and worn contacts. 3. Unbalanced voltages on 3-phase motors. 4. Improper grounding. 5. Packing wear 6. Wear and binding on bearings and drive belts. 7. Proper sequencing of pumps and motors.			
Suggested Retrofits:			
• Replace worn equipment with more efficient units, if available.			☐

An asterisk (*) means that the implementation of the suggested O & M, if checked, may require specialized training for maintenance or operating personnel or create other overriding circumstances that make implementation impractical.

	EXISTS Yes	EXISTS No	RECOM Yes	RECOM No
A-II. Control devices are not inspected on a regular basis.	☐	☐		
Suggested O & M's:				
• Routinely check all time clocks and other control equipment for proper operation; correct time and day; and proper programming of on-off set points. Protect from unauthorized adjustment.			☐	☐
Suggested Retrofits:				
• Consider using an automated energy management system as an alternative.			☐	☐
A-I2. Conditioned air or heated water is discarded.	☐	☐		
Suggested O & M's:				
• None Practical				
Suggested Retrofits:				
• It is important for a building owner to be aware of heat recovery measures. However, it is not wise to install such equipment without first analyzing the energy characteristics of the building, performance of the hardware, and how it fits into the overall energy plan.			☐	☐

Lighting System

L-1. Incandescent lamps are used in offices, workrooms, hallways, and gymnasiums.	☐	☐		
• Where possible use a single incandescent lamp of higher wattage rather than two or more smaller lamps of combined higher wattage.			☐	☐
• Discontinue using extended service lamps except in special cases such as recessed directional lights where short lamp life is a problem.			☐	☐
• Discontinue using multi-level lamps. The efficiency of single wattage lamp is higher per watt than a multi-level lamp.			☐	☐
Suggested Retrofits:				
• Replace non-decorative incandescent lamps with more energy conserving types such as fluorescents in general purpose areas and mercury vapors in large group areas.			☐	☐
L-2. In fixtures where flourescent lamps have been removed, the ballasts have not been disconnected.	☐	☐		
Suggested O & M's:				
* • Disconnect ballasts, which still use significant amounts of energy even though tubes have been removed.			☐	☐
Suggested Retrofits:				
• Replace unnecessary tubes with "dummy" types which draw little current and yet provide uniform lighting effect.			☐	☐
L-3. When burned out flourescent lamps and/or ballasts have been replaced, more efficient lights have not been installed.	☐	☐		
Suggested O & M's:				
* • When relamping, replace fluorescent tubes with more efficient and lower wattage types such as 35-watt instead of 40-watt to achieve a reduction in electrical energy consumption. Wherever possible, replace burned out ballasts with more efficient lower wattage energy conserving ballasts.			☐	☐
* • Consider not replacing burned out bulbs or lamps, and disconnecting ballasts in areas where delamping is possible. For example, in four-lamp fixtures allow two lamps to remain, disconnecting appropriate ballasts.			☐	☐
Suggested Retrofits:				
• Install more efficient fluorescent tubes and ballasts in all existing fixtures. *(Verify that new lamps will work with existing ballasts.)*			☐	☐
• Lowering fixtures will increase illumination levels on the task area, and may permit a reduction in the number of fixtures or the wattage of lamps.			☐	☐

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	EXISTS Yes	EXISTS No	RECO Yes
L-4. Lamps and fixtures are not clean.	☐	☐	
Suggested O & M's:			
• Establish a regular inspection and cleaning schedule for lamps and luminaires (fixtures). Dust build up reduces effectiveness.			☐
• Replace lens shielding that has turned yellow or hazy with new acrylic lenses which do not discolor.			☐
Suggested Retrofits:			
• Replace outdated or damaged luminaires (fixtures) with modern types that are easy to clean.			☐
L-5. Exterior lighting is used.	☐	☐	
Suggested O & M's:			
* • Replace exterior 150-watt flood lamps with 75-watt flood lamps to reduce consumption while maintaining adequate illumination			☐
* • Eliminate outdoor lighting where practical.			☐
Suggested Retrofits:			
• Install a control device (i.e., time clock, photocell) to automatically turn off lights when not needed.			☐
• Replace exterior incandescent lamps with more efficient types such as high pressure sodium, or metal halide.			☐
L-6. Lights are on in unoccupied areas.	☐	☐	
Suggested O & M's:			
• Provide signs instructing occupants to turn off lights when leaving room.			☐
• Organize task areas to eliminate unnecessary illumination.			☐
Suggested Retrofits:			
• Rewire switches so a single switch does not control all fixtures in multiple work spaces.			☐
• Provide timer switches in remote or seldom used areas where there will be brief occupancy periods.			☐
L-7. Natural lighting is not optimized.	☐	☐	
Suggested O & M's:			
• Utilize natural lighting whenever possible.			☐
• Clean walls or repaint with light reflective non-glossy colors.			☐
Suggested Retrofits:			
• Install light sensors and dimming equipment which automatically compensate for varying natural lighting conditions.			☐
L 8. Two lamps have not been removed from four-lamp fixtures where possible.	☐	☐	
Suggested O & M's:			
* • Remove two lamps and disconnect ballasts.			☐
Suggested Retrofits:			
• None Practical			

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Building Envelope System

	EXISTS Yes	EXISTS No	RECOM Yes	RECOM No
B-1. Improper alignment and operation of windows and doors which allows excessive infiltration.	☐	☐		
Suggested O & M's:				
• Realign or re-hang windows or doors that do not close properly. In extreme cases consider permanent sealing of windows.			☐	☐
• Make sure automatic door closing mechanisms work properly. Adjust for faster return.			☐	☐
• Replace or repair faulty gaskets in garage or on other overhead doors.			☐	☐
Suggested Retrofits:				
• Consider resizing exterior doors (i.e., delivery doors), making them smaller to reduce excessive infiltration.			☐	☐
• Add expandable separate enclosures, where practical.			☐	☐
• Install self-closing doors on openings to unconditioned spaces.			☐	☐
• Install a switch on overhead doors that prevents activation of heating/cooling units when door is open.			☐	☐
• Install vestibule doors at major entrances.			☐	☐
B-2. Ceiling/roof insulation is inadequate or has been water damaged.	☐	☐		
Suggested O & M's:				
* • Before replacing water damaged insulation, repair roof where required.			☐	☐
• Verify that vapor barrier faces the conditioned space and is intact.			☐	☐
Suggested Retrofits:				
• Add new insulation to meet recommended standard. Check the cost effectiveness of this measure particularly if your facility is over three stories.			☐	☐
B-3. Weatherstripping and caulking around windows, doors, conduits, piping, exterior joints, or other areas of infiltration is worn, broken or missing.	☐	☐		
Suggested O & M's:				
• Use quality weatherstripping and caulking to insure that all areas of infiltration are sealed.			☐	☐
• Replace broken or cracked windows. *(Air leakage is most evident when wind is blowing against the side of the building.)*			☐	☐
Suggested Retrofits:				
• Where practical, cover all window and through-the-wall cooling units when not in use. Specially designed covers can be obtained at relatively low cost.			☐	☐
• In areas with constant strong winds, consider installing wind screens to protect exterior doors from direct blast of prevailing winds. Screens can be opaque, constructed inexpensively from concrete block or can be transparent, constructed of metal framing with armored glass. Careful positioning is necessary for infiltration control.			☐	☐
B-4. Excessive expanses of glass exist on exterior walls.	☐	☐		
Suggested O & M's:				
• When replacing windows, replace with thermopanes, utilizing the same casings.			☐	☐
• Keep curtains and drapes closed in unoccupied spaces.			☐	☐
Suggested Retrofits:				
• Totally or partially insulate windows. Consider replacing windows with walls.			☐	☐
• Install double pane windows.			☐	☐
• Consider adding reflective or heat absorbing film to minimize solar gain in summer and heat loss in winter. *(Any window film reduces natural lighting and winter solar gain.)*			☐	☐
• Consider installation of adjustable outdoor shading devices.			☐	☐

An asterisk (*) means that the implementation of the suggested 'O & M', if checked, may require special training for maintenance or operating personnel or create other overriding circumstances that make implementation impractical.

	EXISTS Yes	EXISTS No	RECOM Yes	RECOM N
B-5. There is no insulation between conditioned and unconditioned spaces.	☐	☐		
Suggested O & M's:				
• None Practical				
Suggested Retrofits:				
• Insulate between heated/cooled spaces and unconditioned or outside areas such as parking garages, porticos, storage areas, basements and attics.			☐	☐

Ventilation System

V-1. An excessive quantity of outdoor air is used to ventilate the building.	☐	☐		
Suggested O & M's:				
* • Reduce outdoor air quantity to the minimum allowed by codes by adjusting outdoor air dampers during hours of occupancy.			☐	☐
Suggested Retrofits:				
• Replace old style dampers with new high quality, opposed-blade models with better close-off ratings.			☐	☐
V-2. Outdoor air intake dampers open when building is unoccupied.	☐	☐		
Suggested O & M's:				
• Close outdoor air dampers when building is unoccupied. Be sure dampers have proper seals and adjust to insure complete closure.			☐	☐
* • Where codes permit, close outdoor air dampers during first and last hours of occupancy to permit fast warm-up and cool-down.			☐	☐
Suggested Retrofits:				
• Install controls which will automatically close dampers during unoccupied periods.			☐	☐
V-3. Ventilation systems are not utilized for natural cooling capability.	☐	☐		
Suggested O & M's:				
* • Whenever possible, use outside air for cooling rather than using refrigeration. *(Use economizer cycle, if available.)*			☐	☐
Suggested Retrofits:				
• Install an economizer cycle with enthalpy control to optimize use of outside air for cooling.			☐	☐
V-4. Exhaust system operation is not programmed.	☐	☐		
Suggested O & M's:				
• Discontinue use of unnecessary exhaust fans.			☐	☐
* • Re-wire toilet exhaust fans to operate only when lights are on. *(Fans are often wired in reverse. Correct as needed.)*			☐	☐
• Schedules should be established so exhaust fans run only when needed.			☐	☐
• Consider grouping smoking and areas with similar exhaust requirements together so they may be served by one exhaust system.			☐	☐
Suggested Retrofits:				
• Install time clocks or other controls to shut exhaust system off when not needed *(as permitted by code.)*			☐	☐
• Install a rheostat in series with exhaust fan to modulate fan speed so no more than the necessary amount of air will be exhausted.			☐	☐
• Install chemical or electronic odor or particulate remover to reduce the need for using outside air for ventilation.			☐	☐
• Install controlled or gravity dampers on all exhaust ducts to close ducts when fan is not operating			☐	☐

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	EXISTS Yes	EXISTS No	RECOM Yes	RECOM No
V-5. Return, outdoor air and exhaust dampers are not sequencing properly.	☐	☐		
Suggested O & M's:				
• Adjust damper linkage.			☐	☐
• Be sure damper motors are operating properly.			☐	☐
• Readjust position indicators to accurately indicate damper positions.			☐	☐
• Reset linkage or replace dampers if blades do not close tightly.			☐	☐
• Close all outdoor air intake dampers when equipment is shut off and when building is unoccupied.			☐	☐
Suggested Retrofits:				
• Replace old style dampers with new high quality opposed-blade models with better close-off ratings.			☐	☐
V-6. During heating season, temperature of air flow to space feels too cold.	☐	☐		
Suggested O & M's:				
• Raise supply temperature to a minimum of 60° F in interior zones and 65° F in perimeter zones during winter. Be sure to lower the supply temperature to 55° F during the cooling season. *(Check local codes.)*			☐	☐
* • Reduce air volume to prevent a draft effect during heating season.			☐	☐
Suggested Retrofits:				
• None Practical				
V-7. Air flow to space feels unusually low or is inconsistent from one space to another.	☐	☐		
Suggested O & M's:				
• Utilize ductwork access openings for any obstructions such as loose hanging insulation *(in lined ducts)*, loose turning vanes and accessories, and closed volume and fire dampers. Adjust, repair or replace as necessary.			☐	☐
• Inspect all room air outlets and inlets — diffusers, registers and grilles. They should be kept clean and free of all dirt and obstructions. Clean and remove obstructions as necessary.			☐	☐
• Clean or replace dirty or ineffective filters on a regular basis.			☐	☐
• Post signs instructing occupants not to place objects where they will obstruct air flow.			☐	☐
* • Consider rebalancing system.			☐	☐
Suggested Retrofits:				
• None Practical				

Heating System

H-I. Multiple boilers or heaters fire simultaneously.	☐	☐		
Suggested O & M's:				
• Adjust controls so boiler #2, for example, will not fire until boiler #1 no longer satisfies demand.			☐	☐
Suggested Retrofits:				
• Purchase and install automatic staging controls if applicable.			☐	☐

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	EXISTS Yes	EXISTS No	RECOM Yes	RECOM N
H-2. Stack temperature appears excessively high — *(greater than 400° F plus room temperature.)*	☐	☐		
Suggested O & M's:				
* • Insure proper amount of air for combustion is available in furnace room.			☐	☐
• Examine and clean air intake filters.			☐	☐
* • Perform flue gas analysis on a regular basis to insure proper air to fuel ratio.			☐	☐
* • If furnace is over-firing, verify that spuds and nozzles are properly sized. Also check that fuel pressures are not too high.			☐	☐
NOTE: *Checks and maintenance of boiler operations should be performed by qualified personnel. If there are none on the staff of the institution, consider hiring a service contractor.*				
Suggested Retrofits:				
• Purchase kit for flue gas analysis if frequent testing is anticipated.			☐	☐
H-3. Water in heating system is heated when there is no need.	☐	☐		
Suggested O & M's:				
• Turn off boiler, pumps or heat source.			☐	☐
Suggested Retrofits:				
• Install control to automatically shut down heat generating device when outside air temperature reaches 60° F.			☐	☐
H-4. Space temperatures are higher or lower than thermostat settings.	☐	☐		
Suggested O & M's:				
• Recalibrate thermostat.			☐	☐
* • Blow out moisture, oil and dirt from pneumatic lines *(for pneumatic systems)*. Clean contacts if control system is electrical.			☐	☐
• Recalibrate controllers.			☐	☐
• Insure control valves and dampers are modulated properly.			☐	☐
* • Insure heat generating device is producing heat and heat distribution to the space is unobstructed.			☐	☐
• Make sure air intake volume is not excessive.			☐	☐
Suggested Retrofits:				
• For electric control systems, install pre-set solid state thermostats which do not require calibration.			☐	☐
H-5. Heating system hot water temperature feels excessively hot during periods of mild weather.	☐	☐		
Suggested O & M's:				
* • Experiment with hot water temperature reduction until an acceptable comfort level is reached.			☐	☐
• Make sure reset controls work properly.			☐	☐
Suggested Retrofits:				
• Purchase and install automatic temperature controls to schedule heating water temperature according to outside temperature.			☐	☐
H-6. Condensate from street steam is being discharged to sewer drain.	☐	☐		
Suggested O & M's:				
• None Practical				
Suggested Retrofits:				
• Install pump to return condensate to boiler or return condensate by gravity if possible. Condensate also can be used to heat domestic water or boiler combustion air prior to its return to the boiler feedwater system.			☐	☐

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	EXISTS Yes	EXISTS No	RECOM. Yes	RECOM. No
H-7. Heating pilot lights are on during cooling season.	☐	☐		
Suggested O & M's:				
• Turn pilots off. *(Enter shut-off and turn-on dates in your log book and post a notice in the boiler/furnace room.)*			☐	☐
Suggested Retrofits:				
• Replace worn units with new electronic ignition models to avoid unnecessary fuel consumption.			☐	☐
H-8. Steam, condensate and heating water piping insulation is in disrepair or missing.	☐	☐		
Suggested O & M's:				
• Inspect pipes for broken or missing insulation. Repair or replace as needed.			☐	☐
Suggested Retrofits:				
• Install additional pipe insulation in accordance with design specifications and energy conservation codes.			☐	☐
H-9. Operation of oil burner is accompanied by excessive smoke and soot.	☐	☐		
Suggested O & M's:				
• Inspect burner nozzles for wear, dirt and incorrect spray angles. Clean and adjust as necessary.			☐	☐
• Verify that oil is flowing freely and oil pressure is correct.			☐	☐
• Perform flue gas analysis to set proper air to fuel ratio.			☐	☐
Suggested Retrofits:				
• Purchase kit for flue gas analysis if frequent testing is anticipated.			☐	☐
H-10. Burner short-cycles.	☐	☐		
Suggested O & M's:				
• Hot water temperature limit switch may be set too low. Reset as required.			☐	☐
• Thermostat may be faulty. Replace if necessary.			☐	☐
Suggested Retrofits:				
• None Practical				

Cooling System

C-1. Space temperature is higher or lower than thermostat setting.	☐	☐		
Suggested O & M's:				
• Re-calibrate space thermostat.			☐	☐
• Blow out moisture, oil and dirt from pneumatic lines on pneumatic control system. Clean contacts on electric control system.			☐	☐
• Re-calibrate controllers.			☐	☐
• Verify that control valves and dampers modulate properly, especially the economizer section of the system.			☐	☐
• Limit excessive outdoor air intake when not operating economizer cycle.			☐	☐
Suggested Retrofits:				
• For electric control systems install pre-set, solid state thermostats which do not require calibration.			☐	☐

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	EXISTS Yes	EXISTS No	RECO Yes	RECO N
C-2. Chiller is operating during cold weather to provide air conditioning.	☐	☐		
Suggested O & M's:				
• None Practical				
Suggested Retrofits:				
• Provide a water interchange system injecting cooling tower condenser water directly into the system's chilled water circuits. Except for pumping and cooling tower fan horsepower, this provides "free" cooling. Special care must be taken in treating and filtering condenser water.			☐	☐
• If system is forced air, using DX coils and air cooled condenser, install economizer cycle to obtain free cooling.			☐	☐
C-3. Reheat coils are used to maintain zone temperatures.	☐	☐		
Suggested O & M's:				
* • Lower hot water temperature.			☐	☐
* • Raise chilled water temperature. This will result in higher supply air temperatures to space.			☐	☐
• During summer months, turn hot water flow off by shutting valve at reheat coil or by turning off hot water circulating pump.			☐	☐
Suggested Retrofits:				
• Convert to variable air volume system if the reheat coils are not necessary to supply heat during the heating season.			☐	☐
C-4. Multiple air conditioning compressors start at the same time.	☐	☐		
Suggested O & M's:				
• Adjust electric controls to stage compressor operation properly.			☐	☐
Suggested Retrofits:				
• Should automatic controls not exist, purchase and install. This will allow compressor #2, for example, to cut in when compressor #1 can no longer satisfy air conditioning load.			☐	☐
C-5. Building utilizes a dual duct or multizone system.	☐	☐		
Suggested O & M's:				
* • Lower hot deck temperature.			☐	☐
* • Raise cold deck temperature.			☐	☐
* • During summer months, turn heating source off.			☐	☐
• If unit has an economizer cycle, turn mechanical cooling off in winter.			☐	☐
Suggested Retrofits:				
• Convert dual duct or multizone systems to variable air volume, if building has a separate heating system.			☐	☐
• Install controls to automatically reset hot and cold deck temperatures.			☐	☐
C-6. Insulation on cooling line pipes and ducts appears inadequate.	☐	☐		
Suggested O & M's:				
• Repair or replace damaged insulation.			☐	☐
Suggested Retrofits:				
• Insulate all delivery lines and ducts in accordance with recommended R-values.			☐	☐

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	EXISTS Yes	EXISTS No	RECOM Yes	RECOM No
C-7. Air conditioning load trips circuit breaker on extremely warm days.	☐	☐		
Suggested O & M's:				
* • Tighten wire lugs if loose.			☐	☐
* • Replace defective circuit breakers.			☐	☐
• Clean condenser on air cooled systems.			☐	☐
* • Clean scale build-up in condenser on water cooled systems.			☐	☐
Suggested Retrofits:				
• Consider installing insulated underground storage tank that would allow night operation of chiller when electrical demand is low. This reservoir tank would be a source of supply of chilled water for daytime operation. Chiller would not be operated during the day.			☐	☐
C-8. Air of inadequate volume or temperature is being discharged through grilles, and the space temperature cannot be maintained.	☐	☐		
Suggested O & M's:				
• Defrost evaporator coil if iced. Determine cause of icing and correct.			☐	☐
• Clean evaporator coil, fins and tubes.			☐	☐
• Clean or replace air filters.			☐	☐
• Fire damper may be closed. Open and replace fusible link if necessary.			☐	☐
• Balancing damper may have slipped and closed. Open to correct position and tighten wing nut.			☐	☐
* • If fan is rotating backwards, reverse rotation by reversing electrical contacts.			☐	☐
• Clean condenser coil and/or water tower nozzles.			☐	☐
Suggested Retrofits:				
• Install differential pressure-sensing switches to trip alarm when air flow drops significantly.			☐	☐
C-9. Refrigeration condensers or coils are dirty, clogged and/or not functioning efficiently.	☐	☐		
Suggested O & M's:				
• Determine if normal operating temperatures and pressures have been identified and if all gauges are checked frequently to insure design conditions are being met.			☐	☐
* • Increased system pressure may be due to dirty consensers which decrease system efficiency. High discharge temperatures often are caused by defective or broken compressor valves. Repair or adjust as required.			☐	☐
• Inspect the liquid line leaving the strainer. If it feels cooler than the liquid line entering the strainer, it is clogged. It is very clogged if frost or sweat is visible at the strainer outlet. Clean as required.			☐	☐
• Clean coils and/or other elements as needed on a scheduled basis. Include dehumidification coils.			☐	☐
Suggested Retrofits:				
• None Practical				
C-10. Chilled water piping, valves and fittings are leaking.	☐	☐		
Suggested O & M's:				
• Repair joint or piping leaks.			☐	☐
• Repair or replace valves.			☐	☐
Suggested Retrofits:				
• None Practical				

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	EXISTS Yes	EXISTS No	RECOM Yes	RECOM N
C-11. Refrigeration compressor runs continually. *(Direct expansion systems.)*	☐	☐		
Suggested O & M's:				
* • Contacts in starter circuits of controls may be fused. Repair and replace as necessary.			☐	☐
* • Bubbles in eight glass indicate low refrigerant charge. Repair leaks and recharge.			☐	☐
* • Refrigerant charge may be too high. Check discharge pressure and purge excess.			☐	☐
* • Compressor valves may be leaking. Overhaul compressor.			☐	☐
* • Liquid line solenoid valve may be stuck open. Repair or replace.			☐	☐
Suggested Retrofits:				
• Load may be greater than design. Consider replacing with chiller and water cooled condenser system.			☐	☐

Water Heating System

W-1. Storage tanks, piping and water heaters are utilized inefficiently.	☐	☐		
Suggested O & M's:				
• Replace damaged or missing insulation.			☐	☐
• Reduce hot water temperature to 105°-115°F where allowed by code.			☐	☐
Suggested Retrofits:				
• Insulate all insulation on all hot water lines and storage tanks.			☐	☐
• Install a small domestic hot water heater to maintain desired temperature in water storage tank. This could eliminate the need for operating one of the large space heating boilers during summer months.			☐	☐
• Install de-centralized water heating.			☐	☐
W-2. Drips or leaks are evident in hot water systems.	☐	☐		
Suggested O & M's:				
• Repair all leaks including those of the faucets and pumps.			☐	☐
Suggested Retrofits:				
None Practical				
W-3. Electric water heater has no time restrictions on heating cycle.	☐	☐		
Suggested O & M's:				
• Utilize "vacation cycle" on water heater when not needed during extended periods. **NOTE:** *Complete deactivation could cause leaks.*			☐	☐
Suggested Retrofits:				
• Limit the duty cycle with a time clock or other control devices to avoid adding the water heating load to the building during peak electrical demand periods. *(Additional hot water storage capacity may be required.)*			☐	☐
W-4. Devices to conserve heated water have not been utilized where practical.	☐	☐		
Suggested O & M's:				
• None Practical				
Suggested Retrofits:				
• Install mixing valves.			☐	☐
• Replace standard faucets with self-closing, flow restrictor types. *(Highly mineralized water or water containing sediment can cause blockages.)*			☐	☐
• Install a solar water heater to assist in meeting building hot water demand. This can reduce consumption of traditional non-renewable energy fuels in facilities that require large quantities of hot water.			☐	☐

A "Yes" (✓) means that the implementation of the suggested "O & M", if checked, may require additional training for maintenance or operating personnel or create other overriding circumstances that make its implementation impractical.

	EXISTS Yes	EXISTS No	RECOM Yes	RECOM No
Special Systems				
S-1. Kitchen equipment not used effectively.	☐	☐		
Suggested O & M's:				
• Cook with lids in place on pots and kettles.			☐	☐
• Preheat ovens only for baked goods.			☐	☐
• Reduce temperature or turn off frying tables and coffee urns during off peak periods.			☐	☐
• Provide ovens and fryers with loads all of the time they are heated and on.			☐	☐
• Use dishwasher for full loads only.			☐	☐
Suggested Retrofits:				
• Consider using a heat recovery system.			☐	☐
S-2. In-house laundry equipment not used effectively.	☐	☐		
Suggested O & M's:				
• Develop concise operating procedures for each piece of equipment.			☐	☐
• Iron only items which require it.			☐	☐
• Wash and dry full loads only.			☐	☐
• Consider rescheduling laundry work hours to avoid periods when building experiences its peak electrical load.			☐	☐
Suggested Retrofits:				
• Consider using heat recovery.			☐	☐
S-3. Special diagnostic and treatment equipment not used effectively.	☐	☐		
Suggested O & M's:				
• Periodic update on operation of equipment by equipment manufacturer's representative.			☐	☐
• Reduce start-up and shut-down times.			☐	☐
• Consider scheduling this equipment during electrical off-peak periods.			☐	☐
Suggested Retrofits:				
• Consider using heat recovery.			☐	☐
S-4. In-house computer systems adding to peak demand.	☐	☐		
Suggested O & M's:				
• Periodically update on operation of equipment by manufacturer's representative.			☐	☐
• Check cooling air temperatures for computer to confirm correct temperatures.			☐	☐
• Minimize air leakage in and out of computer area.			☐	☐
Suggested Retrofits:				
• Consider using heat recovery.			☐	☐
S-5. Swimming pool water temperature to high. Circulating pumps run continually.	☐	☐		
Suggested O & M's:				
• Reduce water temperatures to 80°-84° F if users can accept it.			☐	☐
• Indoor pool: turn off heater and circulating pumps until an hour before use.			☐	☐
Suggested Retrofits:				
• Outside pool: cover when not in use.			☐	☐
• Use pool as part of heat recovery scheme and/or solar system.			☐	☐

An asterisk (*) means that the implementation of the suggested "O & M", if checked, may require special training for maintenance or operating personnel or create other overriding circumstances that make implementation impractical

	EXISTS Yes	EXISTS No	RECOM. Yes	RECOM. No
S-6. Elevators running too often.	☐	☐		
Suggested O & M's:				
• Reduce the number of elevators in service during hours when majority of persons are not leaving or entering the building.			☐	☐
• Turn off the motor-generator set in the elevator machine room when not in use: nights, weekends, holidays, and slack periods during the day.			☐	☐
* • Reduce speed of elevator.			☐	☐
Suggested Retrofits:				
• Consider changing from motor-generator to a more efficient solid state controller.			☐	☐

Use this space to make any comments on Operational & Maintenance changes:

An asterisk (*) means that the implementation of the suggested O & M, if checked, may require [illegible] for maintenance or operating personnel or create other overriding circumstances that [illegible] impractical.

STEP 3: Evaluation of Potential for Energy Conservation Measures

This evaluation is patterned on the 1976 ASHRAE Systems Handbook, Chapter 1 and the Energy Audit Procedures published by the Ohio Board of Regent in June, 1978. A Relative Important Factor (RIF), ranging from 15 to 35 is assigned to each of the five items listed. Within each, conditions are described and a Weighting Factor (WF) assigned to each condition. The evaluation of the potential of the building for energy conservation measures is based on the sum of the products of the RIF's and WF's. The higher this value, the greater the potential for energy savings. Since energy audits are intended to make relative comparisons, it is essential that conformity be maintained. Therefore, neither the RIF nor the WF are to be altered. Determine the Weighting Factor as follows:

a. Building Envelope (RIF:15)

Percentage of glass area can be estimated by dividing the glass area in a typical wall by the total wall area, Energy Inventory, Step 1. Tight fitting doors and windows denote low infiltration and loos fit-up denote high infiltration.

	WF
Bldgs over 40% glass and large infiltration	1.0
Bldgs over 40% glass	.9
Bldgs with large infiltration	.8
Bldgs under 40% glass	.7
Bldgs with low infiltration	.6
Bldgs under 15% glass	.5

b. Lighting (RIF:15)

To determine power usage for lighting in watts/square foot, add the wattage of all lamps in the building and divide by the gross floor area of the building, Energy Inventory, Step 1.

	WF
Lighting over 3 w/SqFt	1.0
Lighting 2 to 3 w/SqFt	.9
Lighting 1 to 2 w/SqFt	.8
Lighting reduced by changes in switching	.7
Lighting that cannot be reduced	.6

c. HVAC System Type (RIF:35)

Check the type of HVAC system found in your building. If knowledge of the system is not available, obtain information from the mechanical engineer, blueprints, specifications, or a local HVAC contractor.

	WF
Reheat or Dual Duct	1.0
Multizone or Induction Units	.9
Rooftop Units, Wall Units, or Unit Ventilators	.8
Fancoil, VAV, or Heat and Vent System	.7
Radiation, Unit Heaters (no fan systems)	.6

d. Outside Air (RIF:20)

Check the ventilation system for outside air percentage. If knowledge of the system is not available, obtain the information from the mechanical engineer, blueprints, specifications, or a local HVAC contractor.

	WF
75 to 100% Outside Air	1.0
50 to 75% Outside Air	.9
25 to 50% Outside Air	.8
10 to 25% Outside Air	.7
Infiltration, toilet exhausts only	.6

e. Fan Energy (RIF:15)

To determine square feet per fan horsepower (HP), divide building gross floor area by total HP of all HVAC and ventilating fans in the building. HP rating can be found on nameplates of fan motors in your air handling systems, or from blueprints and specifications.

	WF
Under 700 SqFt per fan HP	1.0
200-600 SqFt per fan HP	.9
600-1000 SqFt per fan HP	.8
1000-1500 SqFt per fan HP	.7
1500-2000 SqFt per fan HP	.6
Over 2000 SqFt per fan HP	.5

Complete the following table to determine the energy conservation measure potential index:

	RIF	x	WF	=	EVALUATION
a. Bldg Envelope - % Glass and Infiltration	15				
b. Lighting Levels	15				
c. HVAC System Type	35				
d. Ratio Outside Air	20				
e. Fan Energy	15				
Energy conservation measure potential index:					

STEP 4: Evaluation of Potential for Solar and Renewable Resource Measures

A. AVAILABLE INSOLATION (RIF:30)

Available insolation (received solar radiation) is a function of both, geographical location and site characteristics.

Determine the average annual daily horizontal insolation received at the site from information provided by the State or from National Weather Service data.

Determine by observation the building or site's shading characteristics. A building is considered "shaded" if 50% or greater of its roof and south facing walls are shadded for more than 4 hours per day.

Observe if there is open, unshaded land adjacent to the building.

	WF
greater than 1300 Btu/(Ft.^{2}-Day) and unshaded	1.0
less than 1300 Btu/(Ft.^{2}-Day) and unshaded	.6
greater than 1300 Btu/(Ft.^{2}-Day) and shaded	.2
less than 1300 Btu/(Ft.^{2}-Day) and open land	.8
less than 1300 Btu/(Ft.^{2}-Day) and shaded	.5

B. TYPE OF FUEL (RIF:20)

Determine the type(s) of fuel used for space heating and domestic hot water.

	WF
total electric heat & hot water	1.0
oil or gas heat, electric hot water	.8
coal heat, electric hot water	.5
oil or gas heat & hot water	.6
coal heat & hot water	.2

C. GENERAL BUILDING CHARACTERISTICS (RIF:10)

Observe the shape of the building and the horizontal or vertical distance between a potential solar installation and the primary heating, cooling and domestic hot water conversion equipment.

An "excellent" building is one which is square or rectangular; has an apparent sufficient area for a solar installation; and the location of the primary equipment is within 50 feet of an intended solar installation.

A "good" building is one whose shape would add to the complexity of a solar installation (i.e., H shape, E shape, etc.), but has sufficient available space for solar and the primary equipment is located within 50 feet of an intended installation.

A "fair" building is one in which the shape adds complexity to a solar installation, the available space is limited and the primary equipment is located within 75 feet of the solar installation.

a "poor" building is one which adds extreme complexity to an installation, available free space is limited and the primary conversion equipment is scattered and located greater than 75 feet from an intended solar installation.

	WF
excellent	1.0
good	.8
fair	.5
poor	.2

D. ROOF CHARACTERISTICS (RIF:10)

Observe the roof characteristics; pitch, orientation, construction materials, structural members and roof top obstructions.

An "excellent" roof is one which is flat or, pitched and south facing; the roofing materials are durable and easily worked; the structural members have sufficient capacity to support additional weight; and is free of obstructions that would hinder installation or cause shading.

A "good" roof is one which is flat or pitched facing within 20^{o} east or west of south, with minor roof obstructions but otherwise having the same characteristics as an "excellent" roof.

A "fair" roof is one that meets the "good" roof criteria but requires minor structural rework.

A "poor" roof is one which has many interfering and shading roof top obstructions; a non-south oriented pitched roof; or requires major structural reinforcement.

	WF
excellent	1.0
good	.8
fair	.5
poor	.2

E. WALL CHARACTERISTICS (RIF:20)

Determine the glass area of the south facing walls as a percentage of the total south wall area and determine the predominant type of solid wall construction material.

	WF
Over 75% glass and masonry	1.0
Over 75% glass and aluminum or metal	.7
Over 75% glass and wood or other	.6
25%-75% glass and masonry	.7
25%-75% glass and aluminum or metal	.6
25%-75% glass and wood or other	.4
Under 25% glass and masonry	.5
Under 25% glass and aluminum or metal	.3
Under 25% glass and wood or other	.2

F. Determine the average monthly wind speed using data either supplied by the state, obtained from the National Weather Service or from local records. Also notice if there are any upwind or downwind natural or man-made barriers, located in the general vicinity of an intended wind equipment installation, in which the ratio of the height of the barrier to the distance from the intended installation exceeds 0.15.

	WF
15 mph or greater and less than 0.15 ratio	1.0
10-15 mph and less than 0.15 ratio	.8
less than 10 mph and less than 0.15 ratio	.6
15 mph or greater and greater than 0.15 ratio	.5
10-15 mph and greater than 0.15 ratio	.3
less than 10 mph and greater than 0.15 ratio	.1

EVALUATION OF POTENTIAL FOR SOLAR AND
RENEWABLE RESOURCE MEASURES

	RIF	x	WF	=	EVALUATION
AVAILABLE INSOLATION	30		___		_____
TYPE OF FUEL	20		___		_____
GENERAL BUILDING CHARACTERISTICS	10		___		_____
ROOF CHARACTERISTICS	10		___		_____
WALL CHARACTERISTICS	20		___		_____
WIND DATA	30		___		_____
			TOTAL		_____

STEP 5: SUMMARY OF ESTIMATED ANNUAL COST SAVINGS

	SAVINGS BTU/yr	SAVINGS KWH/yr
Administration		
☐ A-1		
☐ A-2		
☐ A-3		
☐ A-4		
☐ A-5		
☐ A-6		
☐ A-7		
☐ A-8		
☐ A-9		
☐ A-10		
☐ A-11		
☐ A-12		
TOTAL ADMIN.		
Lighting		
☐ L-1		
☐ L-2		
☐ L-3		
☐ L-4		
☐ L-5		
☐ L-6		
☐ L-7		
☐ L-8		
TOTAL LIGHTING		
Building Envelope		
☐ B-1		
☐ B-2		
☐ B-3		
☐ B-4		
☐ B-5		
TOTAL BLDG. ENV.		

	SAVINGS BTU/yr	SAVINGS KWH/yr
Ventilation		
☐ V-1		
☐ V-2		
☐ V-3		
☐ V-4		
☐ V-5		
☐ V-6		
☐ V-7		
TOTAL VENT.		
Heating		
☐ H-1		
☐ H-2		
☐ H-3		
☐ H-4		
☐ H-5		
☐ H-6		
☐ H-7		
☐ H-8		
☐ H-9		
☐ H-10		
TOTAL HEATING		
Special Systems		
☐ S-1		
☐ S-2		
☐ S-3		
☐ S-4		
☐ S-5		
☐ S-6		
TOTAL SPEC. SYS.		

	SAVINGS BTU/yr	SAVINGS KWH/y
Water		
☐ W-1		
☐ W-2		
☐ W-3		
☐ W-4		
TOTAL WATER		
Cooling		
☐ C-1		
☐ C-2		
☐ C-3		
☐ C-4		
☐ C-5		
☐ C-6		
☐ C-7		
☐ C-8		
☐ C-9		
☐ C-10		
☐ C-11		
TOTAL COOLING		

STEP 5: SUMMARY OF ESTIMATED ANNUAL COST SAVINGS (cont'd)

SUMMATION

Savings

ITEM	Non-Electric BTU/yr	Non-Electric $/yr	Electric KWH/yr	Electric $/yr	TOTAL $/yr
ADMINISTRATION					
LIGHTING					
BUILDING ENVELOPE					
VENTILATION					
HEATING					
COOLING					
WATER					
SPECIAL SYSTEMS					
TOTALS					

Total Annual BTU/yr Savings _____ +(3413)x _____ (KWH) = _____

Annual % Savings $\frac{\text{Non-Electric BTU/yr} + (11600) \times \text{KWH}}{\text{Total Annual BTU (Table Section V)}}$ = _____

Annual % $ Savings = $\frac{\text{Total \$/yr}}{\text{Table, Section V Annual Cost}}$ = _____

INSTRUCTIONS FOR POTENTIAL ENERGY SAVINGS CALCULATIONS

The following procedures for calculation of energy savings have been assembled to provide an estimate of such savings. Without doing a detailed analysis of all building energy using systems and their interactions, more precise results cannot be achieved.

Most data required for the estimated savings caluclations will be collected in the Energy Audit. Climatic data can be acquired from the closest federal weather station or from Montana DNRC, Energy Division. Procedures for calculating isolated energy consumptions rates for heating and cooling are embodied within the energy estimating formula; hopefully it will provide reasonable values.

The procedure is outlined to list energy savings for each O&M that is noted to exist by you in the Energy Audit. However, please note for some O&Ms, there are no procedures listed for energy savings caluclations because no O&M is practical or possible for the stated condition, or calculation may be difficult to make due to its nature. For those conditions no energy savings estimate is required, and you should leave those slots open on the summary sheet. However, the box for each condition that exists should be marked, whether or not energy savings calculation procedures apply.

The summary sheet has two blanks for energy savings for each condition. For electric systems, list savings in KWH/yr. For all others, list in Btu/yr. The summary of each category (i.e., Administration, Lighting, etc.) to include energy savings and energy cost savings, the rate per unit of energy taken from Table, Section V, of Energy Audit. Total annual savings to be in Btu/yr. To convert KWH to Btu, multiply KWH x 3413 Btu/KW. Total annual cost savings will be the summation of both electrical and all other energy sources.

To calculate annual percentage of energy savings, apply conversion factor per Table, Section V, of Energy Audit to KWH savings only. Sum the annual energy savings and divide by annual Btu consumption as in Table V. Also, divide annual energy cost savings by total annual energy costs (Table V).

The following data is required only for those calculations procedures that apply by nature of the conditions you have determined to exist. If the condition does not exist, do not make the energy and cost saving calculations. The required data is numerically indicated in calculation formula. For example: condition A-1, quantity "lh" is found and identified under heating item #1. Condition L-5, quantity "3L" is found and identified under "Required Data for Lighting", Item #3, etc.

REQUIRED DATA HEATING

1h. Heating load #51 Energy Audit _____Btu/yr.

or (if all electric building)

#48 Energy Audit _____KWH/yr.

2h. Number of weeks in heating season _____wks/yr.

3h. Recommended thermostat setting _____°F.

4h. Average outside temperature during heating season _____°F.

5h. Gross area heating #9b Energy Audit _____sq. ft.

6h. Glass area total #10 Energy Audit _____sq. ft.

7h. Weekly operating hours heating system 168 hrs/wk.

8h. Percentage of outside air introduced by ventilation system #40 Energy Audit _____%.

9h. Degree days during normal heating season _____HDD.

10h. HVAC systems air handling capacity #39 Energy Audit _____CFM.

REQUIRED DATA COOLING

1c. Cooling load #48 Energy Audit _____KWH/yr.

or #50 Energy Audit _____Btu/yr.

NOTE: Above loads must be adjusted to reflect cooling only (i.e. #48 analyzed during cooling season only; from #50 deduct non-cooling items, domestic water, heating, special systems, etc.)

2c. Number of weeks in cooling season _____wks/yr.

3c. Recommended thermostat setting _____°F.

4c. Average outside temperature during cooling season _____°F.

5c. Gross area cooled #9c Energy Audit _____sq. ft.

6c. Glass area #10 Energy audit: South_____sq. ft.

East _____sq. ft.

West _____sq. ft.

7c. Degree days during normal cooling season _____CDD.

8c. Weekly operating hours cooling system #18 Energy Audit _____hrs/wk.

REQUIRED DATA LIGHTING

1L. Annual operating hours #18 Energy Audit _____hrs/yr.

2L. Annual total interior lighting load #45 Energy Audit _____KWH/yr.

3L. Annual total exterior lighting load #46 Energy Audit _____KWH/yr.

4L. Annual operating hours exterior lighting #46 Energy Audit _____hrs/yr.

POTENTIAL ENERGY SAVINGS CALCULATIONS FOR ESTIMATED OPERATIONAL & MAINTENANCE CHANGES

A-1 1. Heating
A. Unauthorized thermostat setting _____°F.
B. Estimated hours per week #A exists _____hrs/wk.

Heating Energy Savings: 1h x [(A-3h)÷(3h-4h)] x (B ÷ 7h) = _____

_____ x [(_____-_____) ÷ (_____-_____)] x _____ x _____ = _____
Btu/yr (KWH/yr)

2. Cooling
A. Unauthorized thermostat setting _____°F.
B. Estimated hours per week #A exists _____hrs/wk.

Cooling Energy Savings: 1c x [(A-3c)÷2(4c-3c)] x (B ÷ 8c) = _____

_____ x [(_____-_____) ÷ 2(_____-_____)] x _____ x _____ = _____
Btu/yr (KWH/yr)

TOTAL A-1 = _____

A-2 1. Heating
A. Thermostat setting before adjustment _____°F.
B. Estimated hours per week at #A _____hrs/wk.

Heating Energy Savings: 1h x [(A-3h)÷(3h-4h)] x (B ÷ 7h) = _____

_____ x [(_____-_____)÷(_____-_____)] x _____ x _____ = _____
Btu/yr (KWH/yr)

2. Cooling
A. Thermostat setting before adjustment _____°F.
B. Estimated hours per week at #A _____hrs/wk.

Cooling Energy Savings: 1c x [(A-3c)÷2(4c-3c)] x (B ÷ 8c) = _____

_____ x [(_____-_____)÷2(_____-_____)] x _____ x _____ = _____
Btu/yr (KWH/yr)

TOTAL A-2 = _____

A-3 1. Heating
A. Gross area unoccupied space_____sq. ft.
B. Existing space temperature_____°F.
C. New set back temperature_____°F.
D. Hours per week at set back temperature_____hrs/wk.

Heating Energy Savings: 1h x [(B-C)÷(B-4h)] x (D÷7h) x (A÷5h)=_____

_____ x [(_____-_____)÷(_____-_____)] x (_____ ÷ _____) x (_____÷_____) = _____ Btu/yr (KWH/yr)

2. Cooling
A. Gross area unoccupied space_____sq. ft.
B. Existing space temperature_____°F.
C. New set back temperature_____°F.
D. Hours per week at set back temperature_____hrs/wk.

Cooling Energy Savings: 1c x [(C-B)÷2(4c-B)] x D ÷ 8c x (A÷5c)=_____

_____ x [(_____-_____)÷2(_____-_____)] x _____ ÷ _____ x (_____÷_____) = _____ Btu/yr (KWH/yr)

TOTAL A-3_____

A-4 1. Energy savings due heating and cooling
A. Calculate as per A-3 above substituting applicable conditions. _____Btu/yr (KWH/yr)

2. Power savings
A. Total horsepower of motors shut down _____hp.
B. Total annual hours system shut down _____hrs/yr.

Power Savings: A x B x .75 = _____

Total Savings = (1) _____Btu/yr (KWH/yr)
(2) _____KWH/yr

A-5 1. Heating - Temperature set back to 55°F minimum
A. Calculate as per A-3 above substituting applicable conditions.

Heating Energy Savings: 1h x [(B-C)÷(B-4h)] x(D÷7h) x .5 = _____

_____ x [(_____-_____)÷(_____-_____)] x (_____÷_____) x .5 = _____ Btu/yr (KWH/yr)

2. Cooling System shut down
A. Calculate power savings per A-4(2).

Cooling Energy Savings: A x B x .75=_____

_____ x _____ x .75 = _____ KWH/yr

TOTAL A-5_____

A-6 No calculation.

A-7 1. Heating

A. Estimated hours per week heating system in operation _____hrs/wk.
B. Reduction of operating hours possible _____hrs/wk.

Heating Energy Savings: [1h÷(Ax2h)] x B x 2h = _____

[_____÷(_____x_____)] x _____ x _____ = _____
Btu/yr (KWH/yr)

2. Cooling System shut down

A. Calcuaate power savings per A-4(2)

Cooling Energy Savings: A x B x .75=_____

_____ x _____ x .75 = _____
KWH/yr

TOTAL A-7_____

A-8 No calculation

A-9 1. Heating

A. U value of glass

Heating Energy Savings: 6H x A x (3h-4h) x 7h x 2h x .3=_____

_____ x _____ x (_____-_____) x _____ x _____ x .3 = _____
Btu/yr (KWH/yr)

2. Cooling

Cooling Energy Savings: 6c x .75 x solar radiation x .3 x 2c x $\frac{7}{365}$ = _____

South = _____ x .75 x 458,600 x .3 x _____ x $\frac{7}{365}$ = _____
Btu/yr (KWH/yr)

East = _____ x .75 x 297,000 x .3 x _____ x $\frac{7}{365}$ = _____

West = _____ x .75 x 297,000 x .3 x _____ x $\frac{7}{365}$ = _____

Cooling Total_____Btu/yr(KWH/yr)

TOTAL A-9_____

A-10 No calculation

A-11 No calculation

A-12 No calculation

B-1 A. If HVAC system is predominately an air distribution system, use value Item 8h. If not an air distribution, use value of (0) zero.

Energy Savings: .15 x (1-A) x 1h = ____

.15 x (1 - _____) x _____ = _____ Btu/yr (KWH/yr)

B-2 A. "U" value roof #11 Energy Audit _____ Btu/h/sq.ft./of
B. Area of water damaged roof area _____ sq. ft.

Energy Savings Heating: .75 x A x B x 24 x 9h = ____

.75 x _____ x _____ x 24 x _____ = _____ Btu/yr (KWH/yr)

Energy Savings Cooling: .75 x A x B x 24 x 7c = ____

.75 x _____ x _____ x 24 x _____ = _____ Btu/yr (KWH/yr)

TOTAL B-2 _____

B-3 Use same procedure as per B-1. If energy savings calculation performed for B-1, DO NOT duplicate for B-3.

Energy Savings = _____ Btu/yr (KWH/yr)

B-4 Use same procedure as per A-9. If energy savings calculation performed for A-9, DO NOT duplicate for B-4.

Heating Energy Savings _____ Btu/yr (KWH/yr)

Cooling Energy Savings _____ Btuy/yr (KWH/yr)

TOTAL B-4 _____

B-5 No calculation

C-1 If space temperature is lower than thermostat setting:
A. Actual space temperature _____ °F.
B. Thermostat setting _____ °F.

Cooling Energy Savings: (A - B) x 2c x 8c = _____

(_____ - _____) x _____ x _____ = _____ Btu/yr (KWH/yr)

C-2, 3, 4, 5, 6, 7, 8, 10, 11 no calculations

C-9 Clean condenser coils or tubes
Assume 10% savings

Cooling Energy Savings: .10 x 1c = _____

.10 x _____ = _____ Btu/yr (KWH/yr)

W-1 A. Existing hot water temperature, Item #43 Energy Audit _____ °F.
B. Recommended hot water temperature setting _____ °F.
C. Estimated annual consumption, Item #43 Energy Audit _____ gal/yr

Energy Savings: (A-B) x 8.3 x C = ____

(_____ - _____) x 8.3 x _____ = _____ Btu/yr (KWH/yr)

W-2, 3, 4 No calculations

Special Systems

S-1 through S-6 No calculations

L-1 A. Total wattage incandescent lamps that may be replaced with lower wattage lamps _____watt
B. Total replacement lamp wattage _____watts.

Lighting Energy Savings: A - B x (1L x Utilization Factor, p. 11 #45) ÷ 1,000 = _____

_____ - _____ x (__x__) ÷ 1000 = _____ KWH/yr

L-2 A. Total wattage of removed tubes _____watts

Lighting Energy Savings: A x .2 x (1L x Utilization Factor, p.11 #45) ÷ 1000 = _____

_____ x .2 x (__x__) ÷ 1000 = _____ KWH/yr

L-3 A. Total wattage of 40 watt tubes _____watts

Lighting Energy Savings: A x .14 x (1L x Utilization Factor, p.11, #45) ÷ 1000 = _____

_____ x .14 x (__x__) ÷ 1000 = _____ KWH/yr

L-4 Lighting Energy Savings: 2L x .05 = _____

_____ x .05 = _____ KWH/Yr

L-5 A. Total exterior replacement load _____KW

Lighting Energy Savings: 3L - (A x 4L) = _____

_____-(_____ x _____)= _____ KWH/yr

L-6 A. Turn off lights in unoccupied areas.

Assume 5% savings x 2L = _____

.05 x _____ = _____ KWH/yr

B. Organize task lighting

Assume 3% savings x 2L = _____

.03 x _____ = _____ KWH/yr

L-7 A. Gross area of space where natural lighting may be utilized _____sq. ft.
B. Lighting wattage in above space _____watts/sq.ft.
C. Daily hours natural lighting available _____hrs/day.
D. Days per year building in use
Lighting Energy Savings: (A x B x C x D) ÷ 1000 =

(_____ x _____ x _____ x _____) ÷ 1000 = _____ KWH/yr

L-8 A. Number of fixtures from which (2) tubes and ballasts can be disconnected_____fixtures
B. Wattage of each tube _____watts

Lighting Energy Savings: 2 x A x B x (1L x Utilization Factor , p.11 #45) ÷ 1000 = _____

2 x _____ x _____ x (__x__) ÷ 1000 = _____ KWH/yr

H-1 No calculations

H-2 No calculations

H-3 No calculations

H-4 If space temperature is higher than thermostat setting:
A. Actual space temperature _____°F.
B. Thermostat setting_____°F.

Heating Energy Savings: (A-B) x 2h x 7h = ____

(_____-_____) x _____ x _____ = _____
Btu/yr (KWH/yr)

H-5 No calculations

H-6 No calculations

H-7 A. Quantity of pilot lights to be shut off _____number
B. Quantity of gas consumed per pilot light _____ft^3/hr
C. Hours per year pilot lights can be shut off _____hrs/yr

Energy Savings: A x B x C x 1000 = ____

_____ x _____ x _____ x 1000 = _____
Btu/yr

H-8 No calculations

H-9 No calculations

H-10 No calculations

V-1 A. Amount of outside air required by code for ventilation _____CFM/person.
B. Average occupancy Item #19 Energy Audit _____people.
C. Minimum percentage outside air brought into building, Item #40 Energy Audit _____%.

Heating Energy Savings: (C x 10h - A x B) x 1.08 x (3h - 4h) x 2h x 7h =____

(_____ x _____ - _____ x _____) x 1.08 x (_____-_____) x _____ x _____ = _____
Btu/yr (KWH/yr)

V-2 A. Estimate number hours building unoccupied when outside air dampers are open _____hrs/wk.

Heating Energy Savings: (8h x 10h) x 1.08 x (3h - 4h) x A x 2h = ____

(_____x_____) x 1.08 x (_____-_____) x _____ x _____ = _____
Btuy/yr (KWH/hr)

V-3 No calculation

V-4 A. Horsepower rating of exhaust fans, Item #38(a) Energy Audit _____HP.
B. Current annual exhaust fan useage (est.)_____hrs/yr.
C. Adjusted annual exhaust fan useage (est.)_____hrs/yr.

Power Savings: .75 x A x (B-C) = _____

_____ x _____ x (_____ - _____) = KWH/yr

V-5 No calculation

V-6 No calculation

V-7 No calculation

Step 6: Auditor Certification Form

1. I, _____ (please print), *am qualified to perform energy audits in conformance with the requirements of the Montana Institutional Buildings Grants Program by the successful completion of an energy auditor training program conducted by the* Montana DNRC Energy Division on _____ *(dates of training session)*.

2. I conducted the energy audit as a:

- ☐ *staff member of an eligible institution.*
- ☐ *representative of an association of eligible institutions.*
- ☐ *licensed engineer or architect.*

3. My financial interests in connection with this energy audit are:

- ☐ *no outside interests.*
- ☐ *own or am employed by:*
  - ☐ *a consulting firm.*
  - ☐ *an equipment manufacturer or supplier.*
  - ☐ *an energy supplier.*
- ☐ *other (specify)* _____

4. I have completed this energy audit workbook accurately and thoroughly to the best of my knowledge and abilities.

5. I have no responsibility for the day-to-day operation of the building.

6. I have reviewed the energy audit with the administrator of the institution and have explained to him the following:

a. I have walked through the building with him and have identified each O&M measure identified as existing in the energy audit.

b. I have left with the administrator one complete copy of the energy audit with instructions that he is to sign and date, on the worksheet, each O&M as they are implemented. Or, if not implemented, he must state in writing why an O&M cannot be implemented

c. Upon application for Technical Assistance the administrator is to include a copy of the energy audit with O&Ms signed and dated when implemented.

d. I have calculated the estimated annual energy and energy costs savings that may be realized by implementing each O&M.

e. I have advised the administrator the affect on energy and cost savings that may be saved by implementing existing O&Ms per the energy audit.

7. _____
Signature

Address: _____

_____

Phone #: _____

Date : _____

STEP 7: WORKBOOK MAILING INSTRUCTIONS

1. Have you fully completed the Building Energy Consumption Inventory in Step 1?

2. Have you fully completed Step 2 -- Option A (Achieved Energy Savings Computation) or Step 2 -- Option B (Energy Audit Checklist)? One or the other must be completed. If you have shown a 20 percent savings under Option A, make sure all the O&Ms and Retrofits used to accomplish the savings are listed.

3. Is the Auditor Certification Form, Step 6, completely filled out and signed by a qualified auditor? This is a program requirement.

4. Photocopy the entire workbook and mail a copy to:

Institutional Buildings Grants Program
Montana DNRC Energy Division
32 So. Ewing
Helena, MT 59601

* *

In the Department of Energy memo #17 of January 4, 1980, three acceptable reasons for not implementing O&Ms were identified as follows:

(1) The O&M procedure proved not to be feasible;

(2) The O&M would cost more to implement than an institution could be expected to accomplish as an O&M; or

(3) The O&M involved ordering materials which had not yet arrived.

The Department of Energy will not accept a broad categorical statement such as "We have not implemented O&Ms because of a shortage of available funds" or "Our board will consider the O&Ms in the future."

The federal Department of Energy regulations require that all O&Ms identified as existing in an EA or a TA analysis be implemented prior to submitting an application for additional assistance.

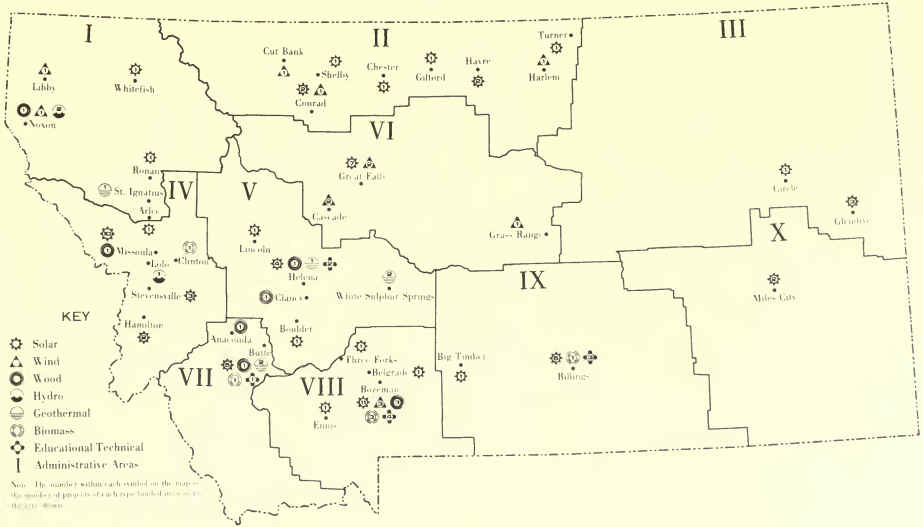
APPENDIX C

STATE OF MONTANA RENEWABLE ENERGY INFORMATION AND RESOURCE MAP

Renewable energy is nothing new to Montana. Until 1975, falling water generated most of the electricity consumed within the state.[1] Wind electric systems were prevalent in eastern Montana prior to the growth of rural electric cooperatives. Historically, renewable energy has been shown to work in Montana. Current and ongoing research and development projects are now helping the state specify the degree to which renewable energy can be effectively and systematically harnessed to meet the energy requirements of our advanced industrial society.

The attached map shows the number and type of renewable energy projects that the state has funded through its Alternative Renewable Energy Grants Program. The names and addresses of each of the grantees can be found in Appendix C of the program's Report to the Montana Legislature, January 1979 (available in each public library across the state). Information about the grant program can be obtained by writing to the Department of Natural Resources and Conservation, Renewable Energy Bureau, 32 South Ewing, Helena, MT 59601.

[1] Itami, Rick, Montana Historical Energy Statistics, Montana Energy Office, February, 1978.



Note: The number within each symbol on the map represents the number of projects of each type funded in each of the seven areas.

APPENDIX D

PHASE I AND II

Advisory Group And A-95 Process

APPENDIX D

Advisory Group for Phase I & II

Sister Marie Damian and Pete McNamel
Montana Catholic Conference (represents all private schools)
(406) 442-5825

Alve Thomas
Office of Superintendent of Public Instruction
(406) 449-2086

Charles Aagenes
Montana Department of Health
(406) 449-3121

Ken Rutledge
Montana Hospital Association
(406) 442-1911

Mike Stephen
Association of Counties
(406) 442-5209

Dan Mizner
Montana League of Cities and Towns
(406) 442-8768

Thomas Whitford
Bureau of Indian Affairs, Billings
(406) 245-2228

Howard Porter
Montana Nursing Home Association, Billings
(406) 248-5966

RECEIVED REVIEW AND COMMENT FORM

SEP 04 1979

PART I

MONT. DEPT. OF NATURAL RESOURCES & CONSERVATION (To Be Completed By The Applicant)

TO: Reviewing Agency Office of Commission of Higher Education

Agency address 33 S. Last Chance Gulch City Helena Zip 59601

FROM: Applicant agency Montana Department of Natural Resources and Conservation

Agency address 32 South Ewing City Helena Zip 59601

SUBJECT: (Project Title) Institutional Grants Program

Because of your possible interest in this project, this Notification of Intent to Apply for Federal Financial Assistance and Review and Comment Form have been submitted to you for review and comment. Please complete Part II of this form and forward it to the ABOVE NAMED APPLICANT prior to August 31, 1979 (date).

PART II

(To Be Completed By The Reviewer)

1. Are there existing planned programs of your agency or any other agency which have similar goals and objectives to the proposed plan? YES_____ NO X - Each unit of the System has a program of cutting back energy use, however.

   If yes, who provides these programs? What populations are being served?

2. In your estimation, do these programs preclude the need for the proposed program? YES_____ NO X See comments

3. Is the proposed plan incompatible with existing or planned programs of your agency or any other agency?

   YES_____ NO_____ If the answer is yes, in what way is the plan incompatible?

   See comment

4. Does the proposed project conform with a comprehensive plan developed for the area in which it is located?

   YES X NO_____

5. Is the population being served in critical need of or large enough to warrant the proposed action?

   YES_____ NO_____ If no, explain. See comments

6. Does the proposed plan conflict with any applicable statute, order, rule or regulation (federal, state, local) with which you are familiar? YES_____ NO X If yes, cite the conflicting statute, order, rule or regulation.

7. Describe any suggestions on means of improving or strengthening the proposed plan.

   See comments

8. On the basis of the above evaluation, convey your general conclusion by checking the appropriate statement or statements.

   _____ No comment on this project.
   _____ Proposal is supported.
   See Comments _____ Proposal is considered nonessential, as explained below.
   _____ Additional information is desired, as described below.
   _____ Conference desired with applicant.

9. Remarks or additional comments. (Please use reverse side of this form.)

   Signature of Reviewer Allen Tuftsmyer

   Title Facilities Planning Consultant, Montana Univ. Sy Date August 31, 1979

RECEIVED

AUG 20 1979

The proposed program causes some concerns in two or three areas. These are:

1. Length of time involved. In order to adequately answer the questions raised relative to Operation & Maintenance, about a year would be involved because buildings' energy systems would have to be observed both during a heating season and a cooling season.

   To comply with O & M requirements would also be time consuming and in some cases, costly -- installing guards on thermostats, replacing light fixture lenses, overhauling steam traps, etc. Then, after all O & M measures have been implemented, the savings must be documented. This requires up to another year in order that both the heating and cooling season's energy can be recorded. And, in the case of a campus with a central heating plant, it would be necessary to buy and install energy use recording devices for those buildings without them.

   From the above, a minimum of 18 months would be needed, but more likely two years.

2. Cost Involved. Based on experience with a building of 92,000 gross square feet, the Energy Inventory involved about 40 man hours. This was done in-house.

   To complete an Energy Audit on this same building would require an outside consultant (in-house personnel are simply not available) at a cost of approximately $2,000. (based on a quote from a mechanical engineering who is doing such work in the private sector). The Technical Assistance program would cost about twice this much. These costs, plus those associated with O & M costs, provide a formidable hurdle to the units of the Montana University System.

3. Emphasis on Alternate Sources of Energy. We have no argument against using sources of energy other than fossil fuels. We support it. However, with the configuration of existing buildings, their relationships to each other and constraints of climate, it is our opinion that the feasibility of alternate sources of energy is rather remote, which means in turn that the possibility of receiving matching grants for energy retrofit is low. Hence, to invest any amounts of money to take part in the program is of doubtful value.

As an alternative, it may be more advantageous to embark on a program such as one herewith outlined:

Using expert consultants -

By visual examination (and examination of energy consumption records, if available) identify excessive energy users.

Identify those operating and physical characteristics which contribute substantially to such excessive energy use.

Investigate ways to modify those characteristics causing excessive energy use, estimate the modification costs and for those which have a reasonable payback period, develop a matching program to help defray costs.

As for improving Operational & Maintenance procedures, each unit at the MUS has an ongoing program to do such within the constraints of available funding and personnel.

REVIEW AND COMMENT FORM

RECEIVED
AUG 31 1979
MONT. DEPT. OF NATURAL RESOURCES & CONSERVATION

PART I

(To Be Completed By The Applicant)

TO: Reviewing Agency Montana Catholic Conference
Agency address P. O. Box 1708 City Helena Zip 59601

FROM: Applicant agency Montana Department of Natural Resources and Conservation
Agency address 32 South Ewing City Helena Zip 59601

SUBJECT: (Project Title) Institutional Grants Program

Because of your possible interest in this project, this Notification of Intent to Apply for Federal Financial Assistance and Review and Comment Form have been submitted to you for review and comment. Please complete Part II of this form and forward it to the ABOVE NAMED APPLICAN prior to August 31, 1979 (date).

PART II

(To Be Completed By The Reviewer)

1. Are there existing planned programs of your agency or any other agency which have similar goals and objectives to the proposed plan? YES _____ NO ✓
   If yes, who provides these programs? What populations are being served?

2. In your estimation, do these programs preclude the need for the proposed program? YES _____ NO ✓

3. Is the proposed plan incompatible with existing or planned programs of your agency or any other agency?
   YES _____ NO ✓ If the answer is yes, in what way is the plan incompatible?

4. Does the proposed project conform with a comprehensive plan developed for the area in which it is located?
   YES _____ NO _____

5. Is the population being served in critical need of or large enough to warrant the proposed action?
   YES _____ NO _____ If no, explain.

6. Does the proposed plan conflict with any applicable statute, order, rule or regulation (federal, state, local) with which you are familiar? YES _____ NO _____ If yes, cite the conflicting statute, order, rule or regulation.

7. Describe any suggestions on means of improving or strengthening the proposed plan.

8. On the basis of the above evaluation, convey your general conclusion by checking the appropriate statement or statements.
   _____ No comment on this project.
   _____ Proposal is supported.
   _____ Proposal is considered nonessential, as explained below.
   _____ Additional information is desired, as described below.
   _____ Conference desired with applicant.

9. Remarks or additional comments (Please use reverse side of this form.)

Signature of Reviewer [illegible]

Title [illegible] Date August 30, 1979

RECEIVED

AUG 30 1979

SUPERINTENDENT OF PUBLIC INSTRUCTION

REVIEW AND COMMENT FORM

PART I

(To Be Completed By The Applicant)

TO: Reviewing Agency Office of Public Instruction

Agency address Room 106, State Capitol City Helena Zip 59601

FROM: Applicant agency Montana Department of Natural Resources and Conservation

Agency address 32 South Ewing City Helena Zip 59601

SUBJECT: (Project Title) Institutional Grants Program

Because of your possible interest in this project, this Notification of Intent to Apply for Federal Financial Assistance and Review and Comment Form have been submitted to you for review and comment. Please complete Part II of this form and forward it to the ABOVE NAMED APPLICANT prior to August 31, 1979 (date).

PART II

(To Be Completed By The Reviewer)

1. Are there existing planned programs of your agency or any other agency which have similar goals and objectives to the proposed plan? YES _____ NO ✓

   If yes, who provides these programs? What populations are being served?

2. In your estimation, do these programs preclude the need for the proposed program? YES _____ NO _____

3. Is the proposed plan incompatible with existing or planned programs of your agency or any other agency?

   YES _____ NO ✓ If the answer is yes, in what way is the plan incompatible?

4. Does the proposed project conform with a comprehensive plan developed for the area in which it is located?

   YES ✓ NO _____

5. Is the population being served in critical need of or large enough to warrant the proposed action?

   YES ✓ NO _____ If no, explain.

6. Does the proposed plan conflict with any applicable statute, order, rule or regulation (federal, state, local) with which you are familiar? YES _____ NO ✓ If yes, cite the conflicting statute, order, rule or regulation.

7. Describe any suggestions on means of improving or strengthening the proposed plan.

   I have included comments concerning procedures.

8. On the basis of the above evaluation, convey your general conclusion by checking the appropriate statement or statements.

   _____ No comment on this project.
   ✓ Proposal is supported.
   _____ Proposal is considered nonessential, as explained below.
   _____ Additional information is desired, as described below.
   _____ Conference desired with applicant.

9. Remarks or additional comments (Please use reverse side of this form.)

Signature of Reviewer, [signature]

Title Deputy Superintendent Date 8-31-79

AUG 20 1979

REVIEW AND COMMENT FORM

PART I

(To Be Completed By The Applicant)

TO: Reviewing Agency Department of Education

Agency address 1100 North Main City Helena Zip 59601

FROM: Applicant agency Montana Department of Natural Resources and Conservation

Agency address 32 South Ewing City Helena Zip 59601

SUBJECT: (Project Title) Institutional Grants Program

Because of your possible interest in this project, this Notification of Intent to Apply for Federal Financial Assistance and Review and Comment Form have been submitted to you for review and comment. Please complete Part II of this form and forward it to the ABOVE NAMED APPLICANT prior to August 31, 1979 (date).

PART II

(To Be Completed By The Reviewer)

1. Are there existing planned programs of your agency or any other agency which have similar goals and objectives to the proposed plan? YES_____ NO ✓

   If yes, who provides these programs? What populations are being served?

2. In your estimation, do these programs preclude the need for the proposed program? YES_____ NO ✓

3. Is the proposed plan incompatible with existing or planned programs of your agency or any other agency?

   YES_____ NO ✓ If the answer is yes, in what way is the plan incompatible?

4. Does the proposed project conform with a comprehensive plan developed for the area in which it is located?

   YES ✓ NO_____

5. Is the population being served in critical need of or large enough to warrant the proposed action?

   YES ✓ NO_____ If no, explain.

6. Does the proposed plan conflict with any applicable statute, order, rule or regulation (federal, state, local) with which you are familiar? YES_____ NO ✓ If yes, cite the conflicting statute, order, rule or regulation.

7. Describe any suggestions on means of improving or strengthening the proposed plan.

8. On the basis of the above evaluation, convey your general conclusion by checking the appropriate statement or statements.

   ____ No comment on this project.
   ✓ Proposal is supported.
   ____ Proposal is considered nonessential, as explained below.
   ____ Additional information is desired, as described below.
   ____ Conference desired with applicant.

9. Remarks or additional comments (Please use reverse side of this form.)

Signature of Reviewer William A. Ball

Title Director Date 8/24/79

REVIEW AND COMMENT FORM

RECEIVED

PART I

(To Be Completed By The Applicant)

TO: Reviewing Agency Association of Counties

Agency address 1802 11th Avenue City Helena Zip 59601

FROM: Applicant agency Montana Department of Natural Resources and Conservation

Agency address 32 South Ewing City Helena Zip 59601

SUBJECT: (Project Title) Institutional Grants Program

Because of your possible interest in this project, this Notification of Intent to Apply for Federal Financial Assistance and Review and Comment Form have been submitted to you for review and comment. Please complete Part II of this form and forward it to the ABOVE NAMED APPLICANT prior to August 31, 1979 (date).

PART II

(To Be Completed By The Reviewer)

1. Are there existing planned programs of your agency or any other agency which have similar goals and objectives to the proposed plan? YES_____ NO X

   If yes, who provides these programs? What populations are being served?

2. In your estimation, do these programs preclude the need for the proposed program? YES_____ NO X

3. Is the proposed plan incompatible with existing or planned programs of your agency or any other agency?

   YES_____ NO X If the answer is yes, in what way is the plan incompatible?

4. Does the proposed project conform with a comprehensive plan developed for the area in which it is located?

   YES_____ NO X

5. Is the population being served in critical need of or large enough to warrant the proposed action?

   YES _____ NO X If no, explain.

6. Does the proposed plan conflict with any applicable statute, order, rule or regulation (federal, state, local) with which you are familiar? YES_____ NO X If yes, cite the conflicting statute, order, rule or regulation.

7. Describe any suggestions on means of improving or strengthening the proposed plan.

8. On the basis of the above evaluation, convey your general conclusion by checking the appropriate statement or statements.

   _____ No comment on this project.
   X Proposal is supported.
   _____ Proposal is considered nonessential, as explained below.
   _____ Additional information is desired, as described below.
   _____ Conference desired with applicant.

9. Remarks or additional comments. (Please use reverse side of this form.)

Signature of Reviewer Michael J. Stephen

Title Research Director Date Aug 22, 1979

REVIEW AND COMMENT FORM

PART I

(To Be Completed By The Applicant)

TO Reviewing Agency Montana State Department of Health

Agency address Cogswell Building City Helena Zip 59601

FROM: Applicant agency Montana Department of Natural Resources and Conservation

Agency address 32 South Ewing City Helena Zip 59601

SUBJECT: (Project Title) Institutional Grants Program

Because of your possible interest in this project, this Notification of Intent to Apply for Federal Financial Assistance and Review and Comment Form have been submitted to you for review and comment. Please complete Part II of this form and forward it to the ABOVE NAMED APPLICAN prior to August 31, 1979 (date).

PART II

(To Be Completed By The Reviewer)

1. Are there existing planned programs of your agency or any other agency which have similar goals and objectives to the proposed plan? YES_____ NO X

   If yes, who provides these programs? What populations are being served?

2. In your estimation, do these programs preclude the need for the proposed program? YES_____ NO X

3. Is the proposed plan incompatible with existing or planned programs of your agency or any other agency?

   YES_____ NO X If the answer is yes, in what way is the plan incompatible?

4. Does the proposed project conform with a comprehensive plan developed for the area in which it is located?

   YES X NO_____

5. Is the population being served in critical need of or large enough to warrant the proposed action?

   YES X NO _____ If no, explain.

6. Does the proposed plan conflict with any applicable statute, order, rule or regulation (federal, state, local) with which you are familiar? YES_____ NO X If yes, cite the conflicting statute, order, rule or regulation.

7. Describe any suggestions on means of improving or strengthening the proposed plan.

8. On the basis of the above evaluation, convey your general conclusion by checking the appropriate statement or statements.

   _____ No comment on this project.
   X Proposal is supported.
   _____ Proposal is considered nonessential, as explained below.
   _____ Additional information is desired, as described below.
   _____ Conference desired with applicant.

Remarks or additional comments (Please use reverse side of this form.)

Signature of Reviewer Charles Odegaard

Title Chief, bureau of Health Planning & Res. Dev. Date August 23, 1979

REVIEW AND COMMENT FORM

PART I

(To Be Completed By The Applicant)

TO: Reviewing Agency Department of Institutions

Agency address 1539 11th Avenue City Helena Zip 59601

FROM: Applicant agency Montana Department of Natural Resources and Conservation

Agency address 32 South Ewing City Helena Zip 59601

SUBJECT: (Project Title) Institutional Grants Program

Because of your possible interest in this project, this Notification of Intent to Apply for Federal Financial Assistance and Review and Comment Form have been submitted to you for review and comment. Please complete Part II of this form and forward it to the ABOVE NAMED APPLICANT prior to August 31, 1979 (date).

PART II

(To Be Completed By The Reviewer)

1. Are there existing planned programs of your agency or any other agency which have similar goals and objectives to the proposed plan? YES_____ NO X

   If yes, who provides these programs? What populations are being served?

2. In your estimation, do these programs preclude the need for the proposed program? YES_____ NO X

3. Is the proposed plan incompatible with existing or planned programs of your agency or any other agency?

   YES_____ NO X If the answer is yes, in what way is the plan incompatible?

4. Does the proposed project conform with a comprehensive plan developed for the area in which it is located?

   YES X NO_____

5. Is the population being served in critical need of or large enough to warrant the proposed action?

   YES X NO _____ If no, explain.

6. Does the proposed plan conflict with any applicable statute, order, rule or regulation (federal, state, local) with which you are familiar? YES_____ NO _____ If yes, cite the conflicting statute, order, rule or regulation.

7. Describe any suggestions on means of improving or strengthening the proposed plan.

8. On the basis of the above evaluation, convey your general conclusion by checking the appropriate statement or statements.

   _____ No comment on this project
   X Proposal is supported.
   _____ Proposal is considered nonessential, as explained below.
   _____ Additional information is desired, as described below.
   _____ Conference desired with applicant.

9. Remarks or additional comments. (Please use reverse side of this form.)

Signature of Reviewer [signature]

Title Program Officer Date 8/20/79

REVIEW AND COMMENT FORM

PART I

(To Be Completed By The Applicant)

TO: Reviewing Agency Central Montana District Six Council
Agency address Box 302 City Roundup Zip 59072

FROM: Applicant agency Montana Department of Natural Resources and Conservation
Agency address 32 South Ewing City Helena Zip 59601

SUBJECT: (Project Title) Institutional Grants Program

Because of your possible interest in this project, this Notification of Intent to Apply for Federal Financial Assistance and Review and Comment Form have been submitted to you for review and comment. Please complete Part II of this form and forward it to the ABOVE NAMED APPLICANT prior to August 31, 1979 (date).

PART II

(To Be Completed By The Reviewer)

1. Are there existing planned programs of your agency or any other agency which have similar goals and objectives to the proposed plan? YES_____ NO X
   If yes, who provides these programs? What populations are being served?

2. In your estimation, do these programs preclude the need for the proposed program? YES_____ NO X

3. Is the proposed plan incompatible with existing or planned programs of your agency or any other agency?
   YES_____ NO X If the answer is yes, in what way is the plan incompatible?

4. Does the proposed project conform with a comprehensive plan developed for the area in which it is located?
   YES_____ NO ? X

5. Is the population being served in critical need of or large enough to warrant the proposed action?
   YES X NO_____ If no, explain.

6. Does the proposed plan conflict with any applicable statute, order, rule or regulation (federal, state, local) with which you are familiar? YES_____ NO X If yes, cite the conflicting statute, order, rule or regulation.

7. Describe any suggestions on means of improving or strengthening the proposed plan.

8. On the basis of the above evaluation, convey your general conclusion by checking the appropriate statement or statements.
   _____ No comment on this project
   X Proposal is supported.
   _____ Proposal is considered nonessential, as explained below.
   _____ Additional information is desired, as described below.
   _____ Conference desired with applicant.

9. Remarks or additional comments (Please use reverse side of this form.)

Signature of Reviewer [signature]

Title [illegible] Date 8/24/79

REVIEW AND COMMENT FORM

RECEIVED

PART I

(To Be Completed By The Applicant)

TO: Reviewing Agency Montana Hospital Association

Agency address 1/20 9th Avenue City Helena Zip 59601

FROM: Applicant agency Montana Department of Natural Resources and Conservation

Agency address 32 South Ewing City Helena Zip 59601

SUBJECT: (Project Title) Institutional Grants Program

Because of your possible interest in this project, this Notification of Intent to Apply for Federal Financial Assistance and Review and Comment Form have been submitted to you for review and comment. Please complete Part II of this form and forward it to the ABOVE NAMED APPLICANT prior to August 31, 1979 (date).

PART II

(To Be Completed By The Reviewer)

1. Are there existing planned programs of your agency or any other agency which have similar goals and objectives to the proposed plan? YES_____ NO X

   If yes, who provides these programs? What populations are being served?

2. In your estimation, do these programs preclude the need for the proposed program? YES_____ NO X

3. Is the proposed plan incompatible with existing or planned programs of your agency or any other agency?

   YES_____ NO X If the answer is yes, in what way is the plan incompatible?

4. Does the proposed project conform with a comprehensive plan developed for the area in which it is located?

   YES X NO_____

5. Is the population being served in critical need of or large enough to warrant the proposed action?

   YES X NO _____ If no, explain.

6. Does the proposed plan conflict with any applicable statute, order, rule or regulation (federal, state, local) with which you are familiar? YES_____ NO X If yes, cite the conflicting statute, order, rule or regulation.

7. Describe any suggestions on means of improving or strengthening the proposed plan.

   SPEED UP THE PROCESSING - SO MONIES WILL BE AVAILABLE BY NOVEMBER 1979.

8. On the basis of the above evaluation, convey your general conclusion by checking the appropriate statement or statements.

   _____ No comment on this project.

   X Proposal is supported.

   _____ Proposal is considered nonessential, as explained below.

   _____ Additional information is desired, as described below.

   _____ Conference desired with applicant.

9. Remarks or additional comments (Please use reverse side of this form.)

Signature of Reviewer

Title Date August 22, 1979

REVIEW AND COMMENT FORM

RECEIVED

AUG 1979

MONT. DEPT. OF NATURAL RESOURCES & CONSERVATION

PART I

(To Be Completed By The Applicant)

TO: Reviewing Agency Department of Community Affairs

Agency address 1424 9th Avenue City Helena Zip 59601

FROM: Applicant agency Montana Department of Natural Resources and Conservation

Agency address 32 South Ewing City Helena Zip 59601

SUBJECT: (Project Title) Institutional Grants Program

Because of your possible interest in this project, this Notification of Intent to Apply for Federal Financial Assistance and Review and Comment Form have been submitted to you for review and comment. Please complete Part II of this form and forward it to the ABOVE NAMED APPLICA prior to August 31, 1979 (date).

PART II

(To Be Completed By The Reviewer)

1 Are there existing planned programs of your agency or any other agency which have similar goals and objectives to the proposed plan? YES X NO

If yes, who provides these programs? What populations are being served?

Soil Conservation Districts, Individuals

2. In your estimation, do these programs preclude the need for the proposed program? YES NO X

3. Is the proposed plan incompatible with existing or planned programs of your agency or any other agency?

YES NO X If the answer is yes, in what way is the plan incompatible?

4. Does the proposed project conform with a comprehensive plan developed for the area in which it is located?

YES X NO

5 Is the population being served in critical need of or large enough to warrant the proposed action?

YES X NO If no, explain.

AUG 1979 RECEIVED DCA/COMM. SERVICES DIV.

6. Does the proposed plan conflict with any applicable statute, order, rule or regulation (local, state, federal) with which you are familiar? YES NO X If yes, cite the conflicting statute, order, rule or regulation

7. Describe any suggestions or means of improving or strengthening the proposed plan.

8 On the basis of the above evaluation, convey your general conclusion by checking the appropriate statement or statements.

- No comment on this project
- X Proposal is supported.
- Proposal is considered nonessential, as explained below.
- Additional information is desired, as described below.
- Conference desired with applicant.

9. Remarks or additional comments. (Please use reverse side of this form.)

Signature of Reviewer

Title Date 8/31/79

APPENDIX E

PHASE II

Application for Step 3 And Step 4
Application Form Appendix

APPENDIX E

STEPS 3 AND 4 OF

PHASE II
APPLICATION

FOR

GRANT ASSISTANCE

FROM THE

FEDERAL DEPARTMENT OF ENERGY

COORDINATED BY

THE STATE OF MONTANA

INSTITUTIONAL BUILDINGS GRANT PROGRAM

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

ENERGY DIVISION

32 SOUTH EWING

HELENA, MONTANA 59601

PHONE - 449-3949

INSTITUTIONAL BUILDINGS GRANT PROGRAM
Instructions for Application

Note: An applicant must be willing and able to participate at the requested level of funding identified in this application.

1. TECHNICAL ASSISTANCE (TA) APPLICATION

Question Who is eligible?

Answer Public or private nonprofit buildings owned by schools, hospitals, units of local government and long-term care nursing homes built and occupied prior to April 20, 1977.

The Technical Assistance Program is the third step of a two-phase federally funded program. The program is incremental in nature, i.e., you must have completed Step 1 - the Preliminary Energy Audit, and Step 2 - the Energy Audit prior to making application for Technical Assistance.

Completion of a Technical Assistance Program will make schools and hospitals eligible for additional federal grant assistance.

A TA Program will identify retrofit measures which an institution should consider implementing. Retrofit measures will be identified in simple payback terms. The identification of a payback period will identify to the decision making authority of an institution where budget expenditures can be prioritized. Implementation of suggested retrofit measures will decrease the percent of energy cost budgeted for a building.

TA APPLICATION INSTRUCTIONS

1. Every applicant completes and sends in 3 copies of the following forms:

   a) EIA-145 Federal Assistance Form, pages 1-19
   b) TA Ranking Form, page 20
   c) Two copies of the Energy Audit Workbook

2. If you had an Independent Energy Audit (nonfederally funded), send in 3 copies of the Independent Energy Audit Certification, page 23.

3. If you are asking for severe hardship consideration, send in 3 copies of the Severe Hardship Form (Schools and Hospitals only) as applicable to the institutional category (pages 25-29).

4. Supporting documents/information for completing the above forms will be found in the application appendix.

2. ENERGY CONSERVATION MEASURES (ECM) APPLICATION

Question Who is eligible?

Answer Public or private nonprofit buildings owned by schools or hospitals and built prior to April 20, 1977.

U.S. DEPARTMENT OF ENERGY
Energy Information Administration
Washington, D.C. 20461

ERA-141

FORM APPROVED
OMB NO. 1905-R0402

GRANTS PROGRAMS FOR SCHOOLS AND HOSPITALS AND BUILDINGS OWNED BY UNITS OF LOCAL GOVERNMENT AND PUBLIC CARE INSTITUTIONS APPLICATION

PART II GENERAL INFORMATION

FEDERAL ASSISTANCE

1 TYPE OF ACTION (Mark appropriate box)	☐ PREAPPLICATION ☒ APPLICATION ☐ NOTIFICATION OF INTENT (Opt.) ☐ REPORT OF FEDERAL ACTION	2 APPLICANT'S APPLICATION	a NUMBER b DATE (Year month day) 19
	Leave Blank.	3 STATE APPLICATION IDENTIFIER	a NUMBER 79-10-19 b DATE ASSIGNED (Year month day) 19 79 10 04

SECTION I—APPLICANT/RECIPIENT DATA

4 LEGAL APPLICANT/RECIPIENT
a Applicant Name :
b Organization Unit :
c Street/P.O. Box
d City — e County
f State — g ZIP Code
h Contact Person (Name & telephone No.)

5 FEDERAL EMPLOYER IDENTIFICATION NO.

6 PROGRAM (From Federal Catalog)
a NUMBER 8 1 . 0 5 2
b TITLE Grant Programs for Schools and Hospitals and Buildings owned by units of Local Government and Public Care Institutions.

7 TITLE AND DESCRIPTION OF APPLICANT'S PROJECT

Grant Programs for Schools & Hospitals & Buildings Owned by Units of Local Government & Public Care Institutions. Check block:

_____ Technical Assistance Program

_____ Energy Conservation Measure

8 TYPE OF APPLICANT/RECIPIENT
A—State; H—Community Action Agency; I—Higher Educational Institution; J—Indian Tribe; K—Other (Specify); B—Interstate; C—Substate District; D—County; E—City; F—School District; G—Special Purpose District
Enter appropriate letter

9 TYPE OF ASSISTANCE
A—Basic Grant; D—Insurance; B—Supplemental Grant; E—Other; C—Loan
Enter appropriate letter(s) A

10 AREA OF PROJECT IMPACT (Names of cities, counties, States, etc.)

11 ESTIMATED NUMBER OF PERSONS BENEFITING

12 TYPE OF APPLICATION
A—New; C—Revision; E—Augmentation; B—Renewal; D—Continuation
Enter appropriate letter A

13 PROPOSED FUNDING

a FEDERAL	$ 00
b APPLICANT	00
c STATE	00
d LOCAL	00
e OTHER	00
f TOTAL	$ 00

14 CONGRESSIONAL DISTRICTS OF:
a APPLICANT
b PROJECT

15 TYPE OF CHANGE (For 12 c or 12 e)
A—Increase Dollars; F—Other (Specify); B—Decrease Dollars; C—Increase Duration; D—Decrease Duration; E—Cancellation
NA
Enter appropriate letter(s) I

16 PROJECT START DATE (Year month day) 19

17. PROJECT DURATION (Months)

18 ESTIMATED DATE TO BE SUBMITTED TO FEDERAL AGENCY ► (Year month day) 19

19 EXISTING FEDERAL IDENTIFICATION NUMBER
NA

20 FEDERAL AGENCY TO RECEIVE REQUEST (Name, City, State, ZIP code)
U.S.Dept. of Energy,P.O.Box 26247 Belmar Br.,Lakewood,Co. 80226

21 REMARKS ADDED
☒ Yes ☐ No

SECTION II—CERTIFICATION

22 THE APPLICANT CERTIFIES THAT ►
a To the best of my knowledge and belief, data in this preapplication-application are true and correct, the document has been duly authorized by the governing body of the applicant and the applicant will comply with the attached assurances if the assistance is approved.
b If required by OMB Circular A-95 this application was submitted pursuant to instructions therein, to appropriate clearinghouses and all responses are attached
(1)
(2) NA
(3)

	No response	Response attached
(1)	☐	☐
(2)	☐	☐
(3)	☐	☐

23 CERTIFYING REPRESENTATIVE
a TYPED NAME AND TITLE
b SIGNATURE
c DATE SIGNED (Year month day) 19

SECTION III—FEDERAL AGENCY ACTION

24 AGENCY NAME
25 APPLICATION RECEIVED (Year month day) 19
26 ORGANIZATIONAL UNIT
27 ADMINISTRATIVE OFFICE
28 FEDERAL APPLICATION IDENTIFICATION
29 ADDRESS
30 FEDERAL GRANT IDENTIFICATION

31 ACTION TAKEN
☐ a AWARDED
☐ b REJECTED
☐ c RETURNED FOR AMENDMENT
☐ d DEFERRED
☐ e WITHDRAWN

32 FUNDING

a FEDERAL	$ 00
b APPLICANT	00
c STATE	00
d LOCAL	00
e OTHER	00
f TOTAL	$ 00

33 ACTION DATE ► (Year month day) 19
34 STARTING DATE (Year month day) 19
35 CONTACT FOR ADDITIONAL INFORMATION (Name and telephone number)
36 ENDING DATE (Year month day) 19
37. REMARKS ADDED
☐ Yes ☐ No

38 FEDERAL AGENCY A-95 ACTION
a In taking above action, any comments received from clearinghouses were considered. If agency response is due under provisions of Part 1, OMB Circular A-95, it has been or is being made
NA
b FEDERAL AGENCY A-95 OFFICIAL (Name and telephone no.)
NA

424-102

STANDARD FORM 424 PAGE 1 (Rev. 4-77)
Prescribed by OMB Circular A-102

PART I: GENERAL INFORMATION Con't.

NOTE: If application is for more than one building, attach a separate "Remarks" section for each building.

SECTION IV—REMARKS

39.0 What is the name and address of the building? _____

40.0 What type of building is it?

(a) ☐ School Facility

(b) ☐ Hospital Facility

(c) ☐ Building owned and primarily occupied by Unit of Local Government

(d) ☐ Building owned and primarily occupied by Public Care Institution

41.0 What is the functional use of the building?

(a) ☐ School

- ☐ Elementary
- ☐ Secondary
- ☐ College/University
- ☐ Vocational
- ☐ Other, specify:_____

(b) ☐ Hospital

- ☐ General
- ☐ Tuberculosis
- ☐ Other, specify:_____

(c) ☐ Local Government Building

- ☐ Office
- ☐ Storage
- ☐ Service
- ☐ Library
- ☐ Other, specify:_____

(d) ☐ Public Care Building

- ☐ Nursing Home
- ☐ Long-Term Care
- ☐ Rehabilitation Facility
- ☐ Public Health Center
- ☐ Residential Child Care Ctr.
- ☐ Other, specify:_____

42.0 What is the size of the building?

_____gross sq. ft.

43.0 Is the building a public or non-profit institution?

(a) ☐ Public (b) ☐ Non-profit

44.0 What is the current building energy consumption rate?_____BTU/sq. ft./yr.

45.1 What is the estimated or actual energy savings resulting from implementation of operations and maintenance procedures?

(a) ☐ Estimated ☐ Actual (b)_____BTU/sq. ft./yr.

45.2 Where are the operations and maintenance procedures identified?

(a) ☐ Energy Audit (b) ☐ Technical Assistance Project

46.0 Eligibility

Check Yes or No, or fill in blanks. If No, provide explanation in the space provided on the following page.

		YES	NO
46.1	Has an energy audit been performed in accordance with the State Plan?	___	___
46.2	Was a portion of the cost of the Energy Audit paid with Federal funds?	___	___
46.3	Have all energy audit recommended maintenance and operating procedures been implemented?	___	___
46.4	Was construction of the building, or any addition thereto, completed on or before April 20, 1977?	___	___
46.5	The building owner of record is _____ _____ _____		
46.6	Is this a severe hardship application? If yes, attach the explanation of conditions of hardship as required in the special State instructions.	___	___

(Complete 46.7 through 46.10 for energy conservation measure applications only.)

46.7	Has a technical assistance program been performed in accordance with the State Plan? (Note: A copy of the program report must be attached if not previously submitted.)	___	___

If the program report is not attached, provide date submitted to:

State Energy Office_____

DOE Regional Office_____

46.8	Have all technical assistance program recommended maintenance and operating procedures been implemented? (Ref. page 29 appendix)	___	___
46.9	Is the simple payback period of each energy conservation measure for which financial assistance is requested at least one year and not more than 15 years and less than the useful life of the building?	___	___

46.0 Eligibility continued

YES NO

46.10 Do you intend to close or dispose of this building within the simple payback period of any energy conservation measure for which funding is requested? If yes, explain. ___ ___

_____
_____
_____
_____

EXPLAIN "NO" ANSWERS BELOW, OR ATTACH ADDITIONAL SHEETS, IF NECESSARY.
(A negative response to questions 46.2, 46.6 and 46.10 requires no explanation.)

47.0 Complete for Technical Assistance Program Applications Only

	YES	NO
47.1 Are the results of the preliminary energy audit and energy audit attached?	___	___

If "No", provide date submitted to:

State Energy Office _____ DOE Regional Office _____

47.2 Does the information on page 2, Building Data Sheet, correspond with the data in the EA?	___	___

47.3 Provide a brief description, by building, of the proposed technical assistance program.
(Note: The proposed program must identify all proposed O&M changes and must include consideration of all possible energy conservation measures, including solar and other renewable resource measures. See 10 CFR 455.42. If additional space is required, attach separate sheets.)

47.4 Complete the following milestones schedule for the proposed Technical Assistance Program:

MILESTONE SCHEDULE

TASK	MONTH - DAY - YEAR
Solicit quotations from qualified analysts	
Sign contract with analyst	
Work Begins	
Project Completed	
Draft TAP Report	
Final TAP Report	

Explain in the space below any milestone which gives the appearance of undue delay:

DESCRIPTION OF THE PROPOSED TECHNICAL ASSISTANCE PROGRAM

47.3.

The objective of this technical program is to evaluate the present condition and operation of the mechanical equipment and systems at _____. The study includes on-site observation of the mechanical systems condition, operation, maintenance, performance and control; verification of system capabilities, useful life and operational costs; and recommended solutions for energy conservation supported by cost analysis. The federal description of a Technical Assistance Program 455.42 will be the scope of work guideline.

48.0 Energy Conservation Measure Program Content
(Complete only for ECM applications)

48.1 On the attached Energy Conservation Measures Sheet, page 8, provide a list of the specific energy conservation measures proposed for funding.

Indicate the following: (1) Reference page or pages from the TA report covering each energy conservation measure, (2) Estimated energy savings, (3) Cost of each measure, (4) Estimated energy cost savings of each measure, (5) the simple payback period of each measure proposed for the building, taking into account the interactions among all measures proposed, and (6) the average simple payback period of all measures proposed. (Note: The average simple payback period of all measures proposed shall be determined by dividing the total estimated cost of all the measures by the total projected annual energy cost savings of all the measures.)

48.2 On the attached Program Milestone Chart, page 9, provide a schedule, including appropriate milestone dates, for the Notice of Grant Awards, Selection of Engineer/Architect, design start, date bids are advertised, opening of bids, acquisition of materials, installation of materials, and the completion of the proposed energy conservation measures for the building.

48.3 Is the applicant aware of any adverse environmental impact which may arise from adoption of any of the proposed energy conservation measures? Yes___ No___. If yes, attach an analysis of that impact and the applicant's plan to minimize or avoid such impact.

48.4 The technical assistance program (TAP) for this building was performed by:

Name_____ Phone_____

Address_____

48.5 Did the technical assistance analyst meet the state qualifications for performing TAP's? Yes___ No___. If the TAP was performed without federal assistance, attach a certification by the analyst that he has no conflicting financial interest and is otherwise qualified to perform the TAP in accordance with the State Plan. (See page 24 of this application.)

48.6 If you are requesting credit for a TAP completed solely at the applicant's expense, without the use of federal funds, complete the following:

a. Date TAP contract was signed._____
b. Total cost of TAP. $_____
c. Cost per square foot._____

(All supporting records for TAP must be available and retained for inspection by DOE as required under the program regulations). Submit a copy of the TA bill with this application. (Ref. pages 19, 21 of appendix.)

48.0 Energy Conservation Measure Program Content continued

(See page 20 of index.)

48.7 Is credit requested for a previously completed ECM? Yes___ No___
(All supporting records for the ECM must be available and retained for inspection by DOE as required under the program regulations).

48.8 Have you included on the Energy Conservation Measures Sheet, completed in Item 48.1, full information describing the ECM for which credit is requested? Yes___ No___

Complete one Part I of application sheet for each building using data from the TA Report. Attach additional sheets if necessary.

Institution/Building Name

Description of Each Measure	Reference Page #'s From TA Report	△ Energy Savings	Cost of Measure	△ $ Energy Savings	○ Payback △ Period
ECM #_____		Elec KWH Gas CCF Oil Gal Coal Ton			
ECM #_____		Elec KWH Gas CCF Oil Gal Coal Ton			
ECM#_____		Elec KWH Gas CCF Oil Gal Coal Ton			
ECM #_____		Elec KWH Gas CCF Oil Gal Coal Ton			
ECM #_____		Elec KWH Gas CCF Oil Gal Coal Ton			
TOTALS FOR BUILDING					☐ AV. PAYBACK

○ Show the Simple Payback Period for each measure taking into account the interactions among various measures (10 CFR 455.42(b)(5)(vii)). For leased equipment see 10 CFR 455.52(W).

△ Note: These figures will normally be different from the figures shown in the TA Report since the TA Report considered each measure individually.

☐ The average payback is determined by dividing the total estimated cost by the projected cost saving from energy savings only.

PROGRAM MILESTONE CHART

Include with Part I of application.
Attach additional charts if necessary.*

FOR

_____
Institution/Building Name

Energy Conservation Measure	Activities Required to Achieve Measures	Month/Day/Year
ECM #____	Selection of Engineer/Architect	
	Design Start	
List ECM #s from previous page to be performed under a single contract	Advertise for Bids	
	Opening of Bids	
	Acquisition of Materials	
	Installation of Materials	
	Completion of Proposed ECM	
ECM #____	Selection of Engineer/Architect	
List ECM #s from previous page to be performed under a single contract	Design Start	
	Advertise for Bids	
	Opening of Bids	
	Acquisition of Materials	
	Installation of Materials	
	Completion of Proposed ECM	
ECM #____	Design Start	
Show here ECM #s which will be performed using in-house personnel	Advertise for Bids for Materials	
	Opening of Bids	
	Acquisition of Materials	
	Installation of Materials	
	Completion of Proposed ECM	

*All ECM's for which credit is requested must also be included on this chart.

FORM APPROVED
OMB NO. 038-R0402

PART II: PROJECT APPROVAL INFORMATION

Item 1.
Does this assistance request require State, local, regional, or other priority rating?
X Yes ____ No

Name of Governing Body: Mt. Dept of Natural Resources Conservation, Energy Division
Priority Rating: ____

Item 2.
Does this assistance request require State, or local advisory, educational or health clearances?
X Yes ____ No

Name of Agency or Board: for Schools it is the Mt. Dept of Administration.
(Attach Documentation): for Hospitals it is the Mt. Dept of Health

Item 3.
Does this assistance request require clearinghouse review in accordance with OMB Circular A-95?
X Yes ____ No

(Attach Comments)
Responsibility of the Mt. Dept of Natural Resources & Conservation, Energy Division.

Item 4.
Does this assistance request require State, local, regional or other planning approval?
X Yes ____ No

Name of Approving Agency: ____
Date: ____

Item 5.
Is the proposed project covered by an approved comprehensive plan?
X Yes ____ No

Check one: State X / Local / Regional
Location of Plan: DNRC, Energy Div., Helena, Mt.

Item 6.
Will the assistance requested serve a Federal installation?
____ Yes X No

Name of Federal Installation: ____
Federal Population benefiting from Project: ____

Item 7.
Will the assistance requested be on Federal land or installation?
____ Yes X No

Name of Federal Installation: ____
Location of Federal Land: ____
Percent of Project: ____

Item 8.
Will the assistance requested have an impact or effect on the environment?
____ Yes ____ No

See instructions for additional information to be provided.

Item 9.
Will the assistance requested cause the displacement of individuals, families, businesses, or farms?
X Yes ____ No

Number of:
Individuals ____
Families ____
Businesses ____
Farms ____

Item 10.
Is there other related assistance on this project previous, pending, or anticipated?
____ Yes X No

See instructions for additional information to be provided.

Item 11
Is the project in a designated flood hazard area?
____ Yes ____ No

See instructions for additional information to be provided.

ED 1A-145

FORM APPROVED
OMB NO. 038-R0402

PART III – BUDGET INFORMATION

SECTION A – BUDGET SUMMARY

Grant Program, Function or Activity (a)	Federal Catalog No. (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1.	81.052	$	$	$	$	$
2.						
3.						
4.						
5. TOTALS		$	$	$	$	$

SECTION B – BUDGET CATEGORIES

6. Object Class Categories	– Grant Program, Function or Activity (1)	(2)	(3)	(4)	Total (5)
a. Personnel	$	$	$	$	$
b. Fringe Benefits					
c. Travel					
d. Equipment					
e. Supplies					
f. Contractual					
g. Construction					
h. Other					
i. Total Direct Charges					
j. Indirect Charges	0				0
k. TOTALS	$	$	$	$	$
7. Program Income	$ 0	$ 0	$ 0	$ 0	$

PART III: BUDGET INFORMATION Con't.

SECTION C – NON-FEDERAL RESOURCES

(a) Grant Program	(b) APPLICANT	(c) STATE	(d) OTHER SOURCES	(e) TOTALS
8. Technical Assistance Program	$	$	$	$
9. Proposed Energy Conservation Measures				
10. TA Credit (Ref. page 19 of appendix.)				
11. ECM Credit(Ref. page 20 of appendix.)				
12. TOTALS	$	$	$	$

SECTION D – FORECASTED CASH NEEDS

	Total for 1st Year	Oct.-Dec., 1980 1st Quarter	Jan.-March, 1981 2nd Quarter	April-June, 1981 3rd Quarter	July-Sept., 1981 4th Quarter
13. Federal	$	$	$	$	$
14. Non-Federal					
15. TOTAL	$	$	$	$	$

SECTION E – BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT

(a) Grant Program	FUTURE FUNDING PERIODS (YEARS) (b) FIRST	(c) SECOND	(d) THIRD	(e) FOURTH
16.	$	$	$	$
17.				
18.				
19.				
20. TOTALS	$	$	$	$

SECTION F – OTHER BUDGET INFORMATION

(Attach additional Sheets If Necessary)

21. Direct Charges: (see attached pages 13, 14, and 15)

22. Indirect Charges:

23. Remarks: Nonfederal match monies is available and will come from the following source:

___ operating budget ____ state grant
___ loan ____ other
___ in-kind match

PART IV PROGRAM NARRATIVE (Attach per instruction)

Part III - Budget Information

Section A - Budget Summary (p. 11 of Application)

1. Identify the source and amount of non-federal funds _____
   _____
   _____

2. Are these funds available for this program without further authorization? ____Yes ____No. If "No", provide explanation.
   _____
   _____

Section B - Budget Categories (p. 11 of Application)

Explain any entries on p. 11 (Section B) under line items a-h in the spaces provided below. Attach additional sheets if necessary.

(a) PERSONNEL - Any task not actually performed by employees of an institution should be entered under contractual. (i.e. contractual personnel costs will be included under contractual). Enter only actual direct charges for this item including rate per hour, number of hours, or percent of time, task and position title. No figures will appear on this line unless institutions intend to use in-house personnel for conducting the TA or implementing ECM measures. (Volunteer labor can only be valued at a rate consistent with similar work in other activities of the grantee or the going rate for that particular occupation in the community. This time must also be documented by rate per hour, number of hours, task and position title.)

(b) FRINGE - Enter itemization of fringe in this space. This item is only allowable when attributable to actual personnel costs cited above.

(c) TRAVEL - Itemize all travel costs. (Travel expenses of contractors are usually included in the amount of the contract cost.) Include details of any travel in the performance of TA's or ECM's by in-house personnel. Conferences & trips to the State Energy Office are not allowable. If you feel you have justified travel which should be allowed, give specific details and justification.

(d) EQUIPMENT - Itemize equipment expenditures. The purchase of equipment by all Grantees of $300 or more with a useful life of one year is subject to prior Department of Energy approval. (The purchase of equipment of $500 or more with a useful life of more than two years by A-110 Grantees subject to CASB regulations require prior Department of Energy approval.) IBGP Program regulations state that for TAs no equipment may be purchased in excess of $500.

(e) SUPPLIES/MATERIALS - All supply/material costs must be itemized. This line item would normally be used to reflect the cost of supplies/materials for ECMs implemented with in-house staff.

(f) CONTRACTUAL - Contractual costs should include all functions which will be contracted out, such as: personnel costs, ECM measures and materials, and the performance of the TA. These costs incude TA/ECM projects or

any portion thereof. These entries should be itemized to include, for example: engineering costs with rate, task and hours for each element of the work to be performed.

(g) CONSTRUCTION - Do not use this object category for this program. No figures should be entered on this line.

(h) OTHER - Any allowable costs not specifically identified on other lines must be itemized here.

The ECM Program is the fourth and final step of a two-phase federally funded program. The program is incremental in nature, i.e., you must have completed Step 1 - the Preliminary Energy Audit, Step 2 - the Energy Audit, and Step 3 - the Technical Assistance Analysis prior to making application for retrofit funding of Energy Conservation measures.

An ECM grant awarded will be for the design, acquisition and installation of measures that will reduce energy consumption of an eligible building. Only those ECMs identified in an approved TA report will be eligible for funding. Identified ECMs applied for must have a simple payback period of not less than one year or more than fifteen years.

ECM APPLICATION INSTRUCTIONS

1. Every applicant sends in 3 completed copies of the following forms:

   a) EIA-145 Federal Assistance Form, pages 1-19
   b) Technical Assistance (TA) Report
   c) TA Summary Report Sheets
   d) ECM Ranking Form, pages 21-22

2. If you had an Independent Technical Assistance Analysis (nonfederally funded) send in 3 completed copies of

   a) Independent TA Assistance Certification, page 24
   b) TA Ranking Form, page 20

3. If you are asking for severe hardship consideration, send in 3 completed copies of the Severe Hardship Application Form, as applicable to the institutional category (pages 25-29)

4. Supporting documents/information for completing the above forms will be found in the applications appendix.

All applications must be submitted and received by the review agency listed below no later than _____. Problems in applications received later than the above date could result in a delay which might jeopardize the application.

Send three copies of application forms to:

Fred Easy, Manager
Institutional Buildings Grant Program
Energy Division
32 South Ewing
Helena, MT 59601

PROBLEM Call the IBGP Staff at 449-3940

PART V - SECTION A - ASSURANCES (A COPY OF THE ASSURANCES AND CERTIFICATIONS MUST BE PART OF THIS APPLICATION)

By the act of signing the application the applicant hereby assures and certifies that he will comply with the regulations (10 CFR 455), policies, guidelines, and requirements, including OMB Circular No. A-102 and/or A-110 and FMC 74-4, as they relate to the application, acceptance and use of Federal funds for this federally assisted project. Also, the applicant assures and certifies with respect to the grant that:

1. It possesses legal authority to apply for the grant; that a resolution, motion or a similar action has been duly adopted or passed as an official act of the applicant's governing body, authorizing the filing of the application, including all understandings and assurances contained therein, and directing and authorizing the person identified as the official representative of the applicant to act in connection with the application and to provide such additional information as may be required.

2. It will comply with Title VI of the Civil Rights Act of 1964 (P.L. 88-352) and in accordance with Title VI of that Act, no person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity for which the applicant receives Federal financial assistance and will immediately take any measure necessary to effectuate this agreement.

3. It will comply with Title VI of the Civil Rights Act of 1964 (42 USC 2000d) prohibiting employment discrimination where (1) the primary purpose of a grant is to provide employment of or (2) discriminatory employment practices will result in unequal treatment of persons who are or should be benefiting from the grant-aided activity.

4. It will comply with the requirements of the provisions of the Uniform Relocation Assistance and Real Property Acquisitions Act of 1970 (P.L. 91-646) which provides for fair and equitable treatment of persons displaced as the result of Federal and federally assisted programs.

5. It will comply with the provisions of the Hatch Act which limit the political activities of employees.

6. It will comply with the minimum wage and maximum hours provisions of the Federal Fair Labor Standards Act, as they apply to hospital and educational institution employees of State and local governments.

7. It will establish safeguards to prohibit employees from using their positions for a purpose that is or gives the appearance of being motivated by a desire for private gain for themselves or others, particularly those with whom they have family, business, or other ties.

8. It will give the sponsoring agency or the Comptroller General through any authorized representative the access to and the right to examine all records, books, papers, or documents related to the grant.

9. It will comply with all requirements imposed by the Federal sponsoring agency concerning special requirements of law, program requirements, and other administrative requirements.

10. It will insure that the facilities under its ownership, lease or supervision which shall be utilized in the accomplishment of the project are not listed on the Environmental Protection Agency's (EPA) list of Violation Facilities and that it will notify the Federal grantor agency of the receipt of communication from the Director of the EPA Office of Federal Activities indicating that a facility to be used in the project is under consideration for listing by the EPA.

11. It will comply with the flood insurance purchase requirements of Section 102 (a) of the Flood Disaster Protection Act of 1973, Public Law 93-234, 87 Stat. 975, approved December 31, 1976. Section 102 (a) requires, on and after March 2, 1975, the purchase of flood insurance in communities where such insurance is available as a condition for the receipt of any Federal financial assistance for construction or acquisition purposes for use in any area that has been identified by the Secretary of the Department of Housing and Urban Development as an area having special flood hazards. The phrase "Federal financial assistance" includes any form of loan, grant, guaranty, insurance payment, rebate, subsidy, disaster assistance loan or grant, or any other form of direct or indirect Federal assistance.

12. It will assist the Federal grantor agency in its compliance with Section 106 of the National Historic Preservation Act of 1966 as amended (16 USC 470), Executive Order 11593, and the Archeological and Historic Preservation Act of 1966 (16 USC 469a-1 et seq.) by (a) consulting with the State Historic Preservation Officer on the conduct of investigations, as necessary, to identify properties listed in or eligible for inclusion in the National Register of Historic Places that are subject to adverse effects (see 36 CFR Part 800.8) by the activity and notifying the Federal grantor agency of the existence of any such properties, and by (b) complying with all requirements established by the Federal grantor agency to avoid or mitigate adverse effects upon such properties.

PART V - SECTION B - CERTIFICATIONS (A COPY OF THESE CERTIFICATIONS MUST BE A PART OF THIS APPLICATION)

The applicant hereby certifies that:

1. It meets the eligibility requirements contained in 10 CFR 455.41 (for applications for Technical Assistance), or 10 CFR 455.51 (for applications for Energy Conservation Measures).

2. It has or will satisfy the requirements set forth in 10 CFR 455.60

3. It has implemented all energy conservation maintenance and operating procedures identified in an energy audit or its equivalent (for applications for technical assistance), or identified in an energy audit and technical assistance program or its equivalents (for applications for energy conservation measures), with the following exceptions: (Ref. page 29 of appendix.)

(Enter "none" or list specific maintenance and operating procedures not implemented and a justification for not implementing each procedure).

4. It will expend funds granted under 10 CFR Part 455 for the purpose stated in this application and in compliance with the requirements of 10 CFR Part 455 and the approved State Plan.

5. It will obtain from the technical assistance analyst, prior to the analyst performing work in connection with a technical assistance program or energy conservation measure, a signed statement certifying that the technical assistance analyst has no conflicting financial interest and is otherwise qualified to perform the functions of a technical assistance analyst in accordance with the requirements set forth in the approved State Plan.

6. It will comply with all reporting requirements contained in 10 CFR 455.63.

7. It will not enter into any contract relating to an energy conservation measure, which requires or may require expenditure of more than $5,000 (excluding technical assistance program costs) that does not conform to the provisions of the Davis-Bacon Act* (40 USC Sections 276a to 276a-5) pertaining to minimum wages for construction in the applicant's locality.

8. It will provide the required matching non-federal funds, including in-kind contributions (limited to the goods and services described in OMB Circular A-102), and that such funds or contributions are directly related to the project.

9. It will comply with the Civil Rights requirements pursuant to 10 CFR 455.3(a)(8). It will comply with the Title VI of the Civil Rights Act of 1964 (PL 88-352), Section 16 of the Federal Energy Administration Act of 1974 (PL 93-438), Title IX of the Education Amendments of 1972, as amended. (PL 92-318, PL 93-568, and PL 94-482), Section 504 of the Rehabilitation Act of 1973 (PL 93-112), the Age Discrimination Act of 1975 (PL 94-135), Title VIII of the Civil Rights Act of 1968 (PL 90-284), the Department of Energy Organization Act of 1977 (PL 95-91), and the Energy Conservation and Production Act of 1976, as amended, (PL 94-385). In accordance with the above laws and regulations issued pursuant thereto, the applicant agrees to assure that no person in the United States shall, on the ground of race, color, national origin, sex, age, or handicap, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity in which the applicant receives Federal assistance from the Department of Energy.

_____ _____

Signature - Authorized, Certifying Representative — Date

_____

Title

* Davis-Bacon rates can be requested at any time after the Application is submitted.

TA RANKING - (Reference Page 15 Appendix) ID / / / / / / / / / / (office use only)

(Please print.)

1. Name of building 1 /
2. Name of institution 2 /
3. Address - Street 3 /
4. City 4 / M/ T/
5. Zip 5 / / / / /
6. Contact person 6 /
7. Date submitted 7 / / / / / /
8. TA ranking number (Ref. page 15 of appendix) 8a mo day yr / / / / / / / (Btu/sq.ft./yr)
   8b / / / / / / (DD/yr)
9. Was your Energy Audit performed without federal money 9 Y- yes N- no ___
10. Total project cost 10a / / / / / /.00 (Ref. page 23 of applicatio
    50% of (10a) cost 10b / / / / / /.00
    Non-federal match 10c / / / / / /.00
11. Are you requesting severe hardship funds? (Schools and Hospitals Only) 11a Y- yes N- no ___ (Ref. page 22 of appendix.
    Amount over 50% (10b) requested 11b / / / / / /.00 (Ref. page 23 of appen
12. Source of non-federal funds 12 ___

    1) operating budget
    2) bank loan
    3) other loan
    4) budget appropriation
    5) state grant
    6) in-kind service
    7) in-kind and budget funds
    8) in-kind and loan funds
    9) other _____

13. Status of non-federal funds 13 ___

    1) presently on hand
    2) authorized but not appropriated
    3) under negotiation/financial firm
    4) matching grant pending
    5) other _____

I certify to the best of my knowledge that the above information is accurate and true.

Signature _____ Date _____

State use only:

14. Total federal monies awarded 14 / / / / / /
15. Amount of No. 10 that is severe hardship 15 / / / / / /
16. Total amount of match 16 / / / / / /

ED 705

ID _____
(office use only)

ECM RANKING (Ref. page 18 of appendix.)
(Please Print)

1. Name of building _____
2. Name of institution _____
3. Address - Street _____
4. City _____
5. Zip _____
6. Contact Person _____
7. Data submitted _____

ECM Ranking Formula (Ref. page 17 of appendix.)

8. Pay back points = $38 - (\frac{\$\_\_\_\_\_}{\$} \times 2 - 2)$

9. Conversion source

9a	9b	9c
($_____) ( )	($_____) ( )	($_____) ( )
($) pts	($) pts	($) pts

10. Energy type and quantity saved
ECM Interaction Figures (fill in if more than one ECM applied for)

	Fuel Factor	BTUs	Total
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			

10a	10b	10c
(_____btu) ( )	(_____btu) ( )	(_____btu) ( )
(btu) pts	(btu pts	(btu) pts

11. Climate $\frac{\text{(DD)}}{11{,}316} \times 11$

12. Remaining life of building _____ (Points)

FOR STATE USE ONLY

ED 706-1

ECM Ranking Formula (Continued)

13. Was your TA and/or ECM performed without the use of federal funds? y = yes
n = no ____

13a. If yes, actual cost of TA and/or ECM for this building /__/__/__/__/__/__/.00

14a. Total project cost _____.00

b. 50% of cost _____.00

c. Non-federal match _____.00

15. Are you requesting severe hardship? y = yes
n = no _____

Amount over 50% (14b) requested _____.00

16. Source of non-federal funds _____

1) operating budget
2) bank loan
3) other loan
4) budget appropiation
5) state grant
6) in-kind service
7) in-kind and budget funds
8) in-kind and loan funds
9) other _____

17. Status of non-federal funds _____

1) presently on hand
2) authorized but not appropriated
3) under negotiation/financial firm
4) matching grant pending
5) other _____

I certify to the best of my knowledge that the above information is accurate and true.

_____ _____
Authorized Signature Date

INDEPENDENT ENERGY AUDIT CERTIFICATION
(Ref. page 30 of appendix.)

On this _____day of _____, 19 _____

_____ hereby assures and certifies that the:

1. Energy Audit was conducted in conformance with the requirements of the State of Montana and 10 CFR, Part 450, subpart E.

2. Energy Auditor was qualified to perform the Energy Audit by either successful completion of the state training course or training and experience equivalent to successful completion of the state training course.

3. Energy Auditor is not employed to operate the building audited.

4. Energy Auditor's financial interests, if any, in connection with this energy audit are listed and attached to this form.

_____ _____

Signature Title

Name of Building _____

INDEPENDENT TECHNICAL ASSISTANCE CERTIFICATION
(Ref. pages 19, 21 of application.)

On this _____ day of _____, 19____,

_____ hereby assures and certifies that the institution:

1. Meets the eligibility requirements contained in 10 CFR 455.51 for applications for energy conservation measures.
2. Has satisfied the requirements set forth in 10 CFR 455.42.
3. Has implemented all energy conservation maintenance and operating procedures identified in an energy audit and in the technical assessment equivalent, or has provided a justification for each procedure not implemented.
4. Has obtained from the technical assistance analyst, a signed statement certifying that the technical assistance analyst has no conflicting financial interest and is otherwise qualified to perform the functions of a technical assistance analyst in accordance with the requirements set forth in the Montana State Plan and 10 CFR 455.61.
5. Has complied with the civil rights requirements pursuant to 10 CFR 455.3 (a) (8).
6. Has not made any major buildings or mechanical modifications since the TA was performed.

_____ _____

(Authorized Signature) (Title)

Building Name _____

SEVERE HARDSHIP (Ref. pages 22, 23, 24 of appendix.)

PUBLIC SCHOOLS

Name _____

Address _____

_____

_____ Estimated TA/ECM Total Cost

_____ Total Federal Amount Requested

_____ Percentage of Total Cost

1. Tax Number _____ (% above State average)
(mill levy)

2. Budget Number

a. Total General Fund Budget ($)_____
b. Total amount received from State School Foundation ($)_____
(a. and b. are for fiscal year in which application is made)

3. Impact Number

a. Total annual energy costs ($)_____

b. Total annual non-capitalized budget, costs are for current calendar year ($)_____

I certify to the best of my knowledge that the above information is accurate and true.

_____ _____ _____
(Authorized Signature) (Title) (Date)

State Use Only

Building ID Number _____

a. Tax number _____ Ranking points _____

b. O.P.I. Percentile number _____

c. Impact number _____ Ranking points _____

d. Total _____

e. Federal funds recommended _____% of total costs _____

SEVERE HARDSHIP (Ref. pages 22, 23, 25 of appendix.)

HOSPITAL

Name _____

Building _____

Address _____

_____

Estimated TA/ECM Total Cost

Total Federal Amount Requested

Percentage of Total Cost

1. Revenue Number

   a. Net annual patient revenue ($) _____

   b. Total noncapitalized annual budget ($) _____

(a. and b. are for calendar year in which application is made)

2. Impact Number

   a. Total annual energy costs for current calendar year ($) _____

   b. Total annual noncapitalized budget for current calendar year ($) _____

I certify to the best of my knowledge that the above information is accurate and true.

_____ _____ _____

(Authorized Signature) (Title) (Date)

State Use Only

Building ID Number _____

a. Revenue number _____ Ranking points _____

b. Impact number _____ Ranking points _____

c. Total _____

d. Federal funds recommended _____ Percentage of total costs _____

SEVERE HARDSHIP (Ref. pages 22, 23, 26 of appendix.)

PRIVATE NON-PROFIT COLLEGES

Estimated TA/ECM Total Cost

Total Federal Amount Requested

Percentage of Total Cost

Name _____

Address _____

_____

1. Tuition & Fee Numbers

   a. Tuition (from full-time students) & room and board fees & special fees ($)_____

   b. Total annual non-capitalized budget ($)_____

(a. and b. are for fiscal year in which application is made)

2. Impact Number

   a. Total annual energy costs ($)_____

   b. Total annual non-capitalized budget, costs are for current calendar year ($)_____

I certify to the best of my knowledge that the above information is accurate and true.

_____ _____ _____

(Authorized Signature) (Title) (Date)

State Use Only

Building I.D. Number _____

a. Tuition & Fee number _____ Ranking points _____

b. Impact number _____ Ranking points _____

c. Total _____

d. Federal funds recommended _____ % of total cost _____

SEVERE HARDSHIP (Ref. pages 22, 23, 27 of appendix.)

PRIVATE NON-PROFIT ELEMENTARY-SECONDARY SCHOOLS

Estimated TA/ECM Total Cost

Name _____

Total Federal Amount Requested

Address _____

Percentage of Total Cost

_____

1. Tuition Number

   a. Tuition from all full-time students & all direct subsidies ($)_____

   b. Total annual non-capitalized expenditures, ($)_____

(a. and b. are for fiscal year in which application is made)

2. Impact Number

   a. Total annual energy costs ($)_____

   b. Total annual non-capitalized budget, costs are for current calendar year ($)_____

I certify to the best of my knowledge that the above information is accurate and true.

_____ _____ _____

(Authorized Signature) (Title) (Date)

State Use Only

Building I.D. Number _____

a. Tuition number _____ Ranking points _____

b. Impact number _____ Ranking points _____

c. Total _____

d. Federal funds recommended _____ % of total cost _____

ED 710

SEVERE HARDSHIP (Ref. pages 22, 23, 28 of appendix.)

COMMUNITY COLLEGES

Name _____

Address _____

_____

_____ Estimated TA/ECM Total Cost

_____ Total Federal Amount Requested

_____ Percentage of Total Cost

1. Tax Support Number

   a. Total State & local tax support ($)_____

   b. Augmented number of full-time students during 4 quarters _____ (students)

(a. and b. are for fiscal year in which application is made)

2. Impact Number

   a. Total annual energy costs ($)_____

   b. Total annual non-capitalized budget, costs are for current calendar year ($)_____

I certify to the best of my knowledge that the above information is accurate and true.

_____ _____ _____

(Authorized Signature) (Title) (Date)

State Use Only

Building I.D. Number _____

a. Tax Support number _____ Ranking points _____

b. Impact number _____ Ranking points _____

c. Total _____

d. Federal funds recommended _____ % of total cost _____

APPENDIX

TO THE

PHASE II GRANT APPLICATION

FOR THE

INSTITUTIONAL BUILDINGS GRANT PROGRAM
DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION
ENERGY DIVISION
32 SOUTH EWING
HELENA, MONTANA 59601
PHONE - 449-3940

PHASE II APPLICATION

APPENDIX - INDEX

APPLICANT FORMAT FOR REQUESTING
TECHNICAL ASSISTANCE AND
ENERGY CONSERVATION MEASURE FUNDING

The applicant must submit an original and two copies of the grant application to the State Energy Office. The applications should be completed in accordance with these instructions, the attached General and Specific Instructions, and any additional State instructions.

The information requested on pages 1, 2, 10-12, and 16-19 is required by the Office of Management and Budget for all IBGP Grant Applications. Pages 3-9, and 13-15 set forth in detail all other data required to determine the eligibility of your proposed program as required by various parts of the Instructions for preparation of the EIA-145 which begins on page 7. You may furnish this information directly on the referenced pages or in any other manner as required by the Instructions. In this regard, we call your attention to the second paragraph of Item I of General Information on page 5.

If the required additional information is submitted directly on pages 3-9, and 13-15, the following instructions will be helpful:

1. EIA-145, Part I, General Information (See Application page 1) (See Instructions pages 5 and 7.)

   Applications must be typed or printed in ink.

   A separate application must be submitted for each building for which funds are requested.

   Applications must be signed by an official who is authorized to contractually bind the organization.

   Make certain each copy of the application is stapled together.

   The federal funds requested under Item 13a should include any hardship funding recommended by the State. Also, technical assistance program credit and energy conservation measure credit (if allowed in the State Plan) should be included in Item 13, Proposed Funding.

   Item 4a must be the Legal Applicant name, such as:

   Smith County District #6 and not
   Kennedy High School.

   This name will usually be the identical name that is used to report Federal taxes withheld from wages/salaries of employees of the institution. (This will correspond with the Federal ID number requested in Item 5.)

2. EIA-145, (Pages 2-19) will contain program specifics for each building.

   a. Page 2 (39.0 - 45.2) Self-explanatory.

b. Page 3 (46.1 - 46.5) Self-explanatory.

c. Page 3 (46.5) The applicant must hold fee simple title to the building or have a leasehold interest which shall become a fee simple interest.

d. Page 3 (46.6) If applicable, refer to State instructions regarding any additional information which must be submitted to determine the level of hardship funding. (See pages 22-30 of index)

e. Page 3 (46.9) Only Energy Conservation Measures (ECM's) with simple payback periods between 1 and 15 years are eligible for funding.

f. Page 4 (46.10) To be eligible for funding, the institution may not have plans or intend to close or dispose of the building within the simple payback period of any ECM for which funding is requested.

(PAGE 5 IS FOR TECHNICAL ASSISTANCE PROGRAM APPLICATIONS ONLY.)

g. Page 5 (47.1 - 47.2) Self-explanatory.

h. Page 5 (47.3) The proposed program may not be restricted to the consideration of a limited number of ECM's.

i. Page 5 (47.4) Self-explanatory.

(PAGE 6 IS FOR ENERGY CONSERVATION MEASURE APPLICATIONS ONLY.)

j. Page 6 (48.1 - 48.5) Self-explanatory.

k. Page 6 (48.6) Credit for TAP's performed solely at the applicant's expense are allowable only if the effective date of the contract for the service is subsequent to November 9, 1978, and is permissable under the applicable State Plan. (See page 19, 21 of appendix and page 24 of application.)

l. Page 7 (48.7) To be eligible for ECM credit, the previously implemented ECM must meet all the following criteria: (See page 20 of appendix and page 12 of applicatic

1. Be performed on the same building for which the new ECM is being requested.

2. Had been recommended in the approved technical assistance program for that building.

3. The TA must have been conducted prior to the commencement of work on any ECM.

4. Meet all other requirements of 10 CFR 455, A-102 and/or A-110, and FMC 74-4, including payback period, competitive bidding, energy savings, etc.

5. The ECM was started subsequent to November 9, 1978.

6. All financial and engineering records for the completed ECM must be retained for 3 years.

7. Not funded by Federal funds, including revenue sharing.

8. Permissable under the State Plan.

m. Page 7 (48.8) If applicable, the ECM for which credit is requested must be considered with all other ECM's in determining the average simple payback for the building. Therefore, the data regarding the measure previously implemented must be included on the ECM Sheet. (See page 8, 9 of application and page 20 of appendix.)

3. EIA-145, Part II, Project Approval Information, Page 10 Self-explanatory. (See page 9 of the Instruction Packet.)

4. EIA-145, Part III, Budget Information, Pages 11-12 (See page 10 of the Instruction Packet.)

a. Page 11, Section A Fill in TA or ECM on line 1a as appropriate. The total budget should include TA credit or ECM credit, if applicable. The Federal and Non-Federal shares of the budget should be shown in columns (e) and (f) respectively. These should reflect the required 50/50 match or the approved ratio based on severe hardship.

b. Page 11, Section B In the spaces below, the total budget for that building should be broken down by the indicated Object Class Categories. Budget detail showing the basis/cost computations for the amounts proposed in each budget category must be provided as a narrative to the budget. See pages 13, 14, and 15 following the budget information in the Application.

c. Page 11, Section B, Line 6g Construction Do not use this line. If the construction work is contracted for the amounts should be shown in line 6f Contractual. Also, if the work is to be performed by in-house personnel alone or in conjunction with contractors, the appropriate categories other than Construction should be completed. Note p. 15 item g.

d. Page 11, Section B If other than contractual alone, include a detailed breakdown of the costs indicated for each Object Class Category on pages 13, 14, and 15 of the application. Space is provided but a continuation sheet may be attached.

e. Page 11, Section B, Indirect Costs Indirect costs are generally not chargeable against contract amounts as they should be applied only to the estimated direct labor costs of the project. The proposed rate should be supported with an approved indirect cost allocation plan, which is based only on cost elements appropriate to this type of project.

IMPORTANT: A copy of this rate approval, including a breakdown of cost elements, should accompany this application.

f. Page 12, Section C, Non-Federal Resources* (See page 11 of the Instruction Packet.) Note the following:

Line 8 (a) Technical Assistance Program
9 (a) Proposed Energy Conservation Measures
10 (a) TA credit (if TA credit is requested, an invoice to support TA credit must be included). (See pages 19, 21 of appendix.)
11 (a) ECM credit (if ECM credit is requested documentation of cost breakdown must accompany the application). (See page 20 of appendix.)

* The source and amount of all non-federal funds must be identified. Indicate if non-federal funds are subject to prior approval by higher authority. See page 13 of the Application.

g. Page 12, Section D, E, and F Self-explanatory.

5. EIA-145, Part IV, Program Narrative Not used. The information normally required in Part IV has been requested in Part I.

6. EIA-145, Part V, Assurances and Certifications. Pages 16-19 Section A - Assurances A copy of Section A need not be signed but must be attached to the Application.

Section B - Certifications A Signed copy of the Certifications must be attached to the Application.

Special Note: Part V, Section B - Certifications, Page 18, #3:

Provide required information regarding O&M implementation. Enter "none" or list specific maintenance and operating procedures not implemented and a justification for not implementing each procedure. Page 19 - The signature, title and date of the authorized, certifying representative must accompany the certifications. (See page 29 of appendix.)

ADDITIONAL STATE INSTRUCTIONS TO COVER REQUIREMENTS OF THEIR STATE PLAN WILL FOLLOW PAGE 14 IN THIS INSTRUCTION PACKET.

EIA-145

U.S. DEPARTMENT OF ENERGY
Energy Information Administration
Washington, D.C. 20461

FORM APPROVED
OMB NO. 038-R0402

GRANTS PROGRAMS FOR SCHOOLS AND HOSPITALS AND BUILDINGS OWNED BY UNITS OF LOCAL GOVERNMENT AND PUBLIC CARE INSTITUTIONS APPLICATION

GENERAL INFORMATION

I. Regulations/Purpose

Under the National Energy Conservation Policy Act (P.L. 95-619, 92 Stat. 3206), schools, hospitals, units of local government and public care institutions are eligible for grants of Federal funds which are to be used to aid in the conduct of technical assistance programs in public and non-profit schools and hospitals, **or of local government and public care buildings. Schools and hospitals** are also eligible for grants to aid in the acquisition and installation of energy conservation measures. The Department of Energy (DOE) Regulations published in the Federal Register on April 17, 1979, page 22949 et. seq, provide implementing guidelines for technical assistance and energy conservation measures under the NECPA. A copy of the regulations may be obtained from U.S. Department of Energy, Distribution - Room B-447, Federal Building, 12th & Pennsylvania Avenue, N.W., Washington, D.C. 20461.

No application will be eligible for a grant unless its application clearly demonstrates that the proposed programs for technical assistance or energy conservation measures either meet, or prior to the expenditure of any DOE grant funds, will meet, all of the minimum program requirements contained in the Regulations.

II. Completion of Application

The Office of Management and Budget's (OMB) Standard Form 424 (Federal Assistance), prescribed by OMB Circular A-102 dated September 12, 1977, will hereinafter be referred to:

— Grants Programs for Schools and Hospitals and Buildings Owned by Units of Local Government and Public Care Institutions Application (Form EIA-145)

OMB Standard Form-424 has been modified to require applicants on Form EIA-145, under the remarks section, to provide specific details of program operation in addition to specific assurances required by the NECPA and those incorporated in the Federal Register, Vol. 42, Sept. 12, 1977.

GENERAL INFORMATION Con't.

In completing the application package, applicants should refer to Office of Management and Budget (OMB) Circulars A-102 and Treasury Circular 1082, both of which deal with grants and financial management.

Sums allocated for each State for the purposes of technical assistance and energy conservation measures will be a portion of the amount appropriated by the Congress for this purpose. The allocation formula is set forth in 10CFR 455.101 of the Regulations.

Applications that contain errors or other defects may be returned to the applicant for correction of such errors or defects.

III. When and Where to Submit Application

In order to obtain grant funds for technical assistance or energy conservation measures, applicants must submit an application in conformance with the requirements of the DOE Regulations, as set forth in 10CFR 455.60 and 10CFR 455.62 to the appropriate State energy office not later than the date specified in the approved State Plan, unless an extension of time is requested and granted. One original copy is to be submitted to the appropriate State Energy Office. State applications for administrative costs will be submitted in accordance with 10CFR 455.62.

GENERAL INSTRUCTIONS

Applications should be submitted in accordance with the applicable approved State Plan. The application contains 5 parts, each of which must be completed by the applicant. Part I requires general information about the applicant and the nature of the grant; Part II requires information necessary to assure conformance with OMB regulations; Part III requires detailed budget information; Part IV requires a detailed description, of the manner in which the applicant will conduct the technical assistance program or energy conservation measures project; and Part V contains the assurances required of an applicant by Federal law and regulations pursuant to Federal law as a condition of eligibility for Federal financial assistance.

Programs for technical assistance and energy conservation measures for schools are to be coordinated with the State school facilities agency while those for hospitals are to be coordinated with the State hospital facilities agency. (10 CFR455.70)

FORM APPROVED
OMB NO. 038-R0402

PART I: GENERAL INFORMATION

SPECIFIC INSTRUCTIONS

Part I of the application is the standard form used for most State grant programs. Where possible, DOE has preprinted information of the form. The cover sheet should be completed as accurately as possible by the applicant. Under remarks, the applicant must provide the additional information required under the program.

APPLICANT PROCEDURES FOR SECTION I

Applicant will complete all items in Section I. If an item is not applicable, write "NA". If additional space is needed, insert an asterisk "*", and use the remarks section on the back of the form. An explanation follows for each item.

Item

1. Mark appropriate box. Pre-application and application guidance is in FMC 74-4 and Federal agency program instructions. Notification of intent guidance is in Circular A-95 and procedures from clearinghouse. Applicant will not use "Report of Federal Action" box.

2a Applicant's own control number, if desired.

2b. Date Section I is prepared.

3a. Number assigned by State clearinghouse, or if delegated by State, by areawide clearinghouse. All requests to Federal agencies *must* contain this identifier if the program is covered by Circular A-95 and required by applicable State/areawide clearinghouse procedures. If in doubt, consult your clearinghouse.

3b. Date applicant notified of clearinghouse identifier.

4a-4h. Legal name of applicant/recipient, name of primary organizational unit which will undertake the assistance activity, complete address of applicant, and name and telephone number of person who can provide further information about this request.

5. Employer identification number of applicant as assigned by Internal Revenue Service.

6a. Use Catalog of Federal Domestic Assistance number assigned to program under which assistance is requested. If more than one program (e.g., joint-funding) write "multiple" and explain in remarks. If unknown, cite Public Law or U.S. Code.

6b. Program title from Federal Catalog. Abbreviate if necessary.

7. Brief title and appropriate description of project. For notification of intent, continue in remarks section if necessary to convey proper description.

8. Mostly self-explanatory. "City" includes town, township or other municipality.

9. Check the type(s) of assistance requested. The definitions of the terms are:

   A. Basic Grant. An original request for Federal funds. This would not include any contribution provided under a supplemental grant.

   B. Supplemental Grant. A request to increase a basic grant in certain cases where the eligible applicant cannot supply the required matching share of the basic Federal program (e.g., grants awarded by the Appalachian Regional Commission to provide the applicant a matching share).

   C. Loan. Self explanatory.

   D. Insurance. Self explanatory.

   E. Other. Explain on remarks page.

Item

10. Governmental unit where significant and meaningful impact could be observed. List only largest unit or units affected, such as State, county, or city. If entire unit affected, list it rather than subunits.

11. Estimated number of persons directly benefiting from project.

12. Use appropriate code letter. Definitions are:

   A. New. A submittal for the first time for a new project.

   B. Renewal. An extension for an additional funding/budget period for a project having no projected completion date, but for which Federal support must be renewed each year.

   C. Revision. A modification to project nature or scope which may result in funding change (increase or decrease).

   D. Continuation. An extension for an additional funding/budget period for a project the agency initially agreed to fund for a definite number of years.

   E. Augmentation. A requirement for additional funds for a project previously awarded funds in the same funding/budget period. Project nature and scope unchanged.

13. Amount requested or to be contributed during the first funding/budget period by each contributor. Value of in-kind contributions will be included, if the action is a change in dollar amount of an existing grant (a revision or augmentation), indicate only the amount of the change. For decreases enclose the amount in parentheses. If both basic and supplemental amounts are included, break out in remarks. For multiple program funding use totals and show program breakouts in remarks. Item definitions: 13a. amount requested from Federal Government, 13b. amount applicant will contribute, 13c. amount from State, if applicant is not a State, 13d. amount from local government, if applicant is not a local government; 13e. amount from any other sources, explain in remarks.

14a. Self explanatory.

14b. The district(s) where most of actual work will be accomplished. If city-wide or State-wide, covering several districts, write "city-wide" or "State-wide."

15. Complete only for revisions (item 12c), or augmentations (item 12e).

16. Approximate date project expected to begin (usually associated with estimated date of availability of funding).

17. Estimated number of months to complete project after Federal funds are available.

18. Estimated date pre-application/application will be submitted to Federal agency if this project requires clearinghouse review. If review not required, this date would usually be same as date in item 2b.

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PART I: GENERAL INFORMATION Con't.

Item	
19	Existing Federal identification number if this is not a new request and directly relates to a previous Federal action. Otherwise write "NA".
20.	Indicate Federal agency to which this request is addressed Street address not required, but do use ZIP
21.	Check appropriate box as to whether Section IV of form contains remarks and/or additional remarks are attached

APPLICANT PROCEDURES FOR SECTION II

Applicants will always complete items 23a, 23b, and 23c. If clearinghouse review is required, item 22b must be fully completed. An explanation follows for each item.

Item	
22b	List clearinghouses to which submitted and show in appropriate blocks the status of their responses. For more than three clearinghouses, continue in remarks section. All written comments submitted by or through clearinghouses must be attached.
23a	Name and title of authorized representative of legal applicant
23b.	Self explanatory.
23c.	Self explanatory.
Note:	Applicant completes only Sections I and II. Section III is completed by Federal agencies

FEDERAL AGENCY PROCEDURES FOR SECTION III

If applicant-supplied information in Sections I and II needs no updating or adjustment to fit the final Federal action, the Federal agency will complete Section III only. An explanation for each item follows:

Item	
24	Executive department or independent agency having program administration responsibility
25.	Self explanatory.
26.	Primary organizational unit below department level having direct program management responsibility.
27.	Office directly monitoring the program.
28.	Use to identify non-award actions where Federal grant identifier in item 30 is not applicable or will not suffice.
29	Complete address of administering office shown in item 26
30.	Use to identify award actions where different from Federal application identifier in item 28
31.	Self explanatory. Use remarks section to amplify where appropriate
32	Amount to be contributed during the first funding/budget period by each contributor. Value of in-kind contributions will be included. If the action is a change in dollar amount of an existing grant (a revision or augmentation), indicate only the amount of change. For decreases, enclose the amount in parentheses. If both basic and supplemental amounts are included, break out in remarks. For multiple program funding, use totals and show program breakouts in remarks. Item definitions: 32a, amount awarded by Federal Government. 32b, amount applicant will contribute. 32c, amount from State, if applicant is not a State. 32d, amount from local government if applicant is not a local government. 32e, amount from any other sources, explain in remarks.
33	Date action was taken on this request
34	Date funds will become available.
35.	Name and telephone no. of agency person who can provide more information regarding this assistance.
36	Date after which funds will no longer be available.
37.	Check appropriate box as to whether Section IV of form contains Federal remarks and/or attachment of additional remarks.
38.	For use with A-95 action notices only. Name and telephone of person who can assure that appropriate A-95 action has been taken—if same as person shown in item 35, write "same". If not applicable, write "NA".

Federal Agency Procedures—special considerations

A. Treasury Circular 1082 compliance. Federal agency will assure proper completion of Sections I and III. If Section I is being completed by Federal agency, all applicable items must be filled in. Addresses of State Information Reception Agencies (SCIRA's) are provided by Treasury Department to each agency. This form replaces SF 240, which will no longer be used.

B. OMB Circular A-95 compliance. Federal agency will assure proper completion of Sections I, II, and III. This form is required for notifying all reviewing clearinghouses of major actions on all programs reviewed under A-95. Addresses of State and areawide clearinghouses are provided by OMB to each agency. Substantive differences between applicant's request and/or clearinghouse recommendations, and the project as finally awarded will be explained in A-95 notifications to clearinghouses.

C. Special note. In most, but not all States, the A-95 State clearinghouse and the (TC 1082) SCIRA are the same office. In such cases, the A-95 award notice to the State clearinghouse will fulfill the TC 1082 award notice requirement to the State SCIRA. Duplicate notification should be avoided.

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PART II: PROJECT APPROVAL INFORMATION

SPECIFIC INSTRUCTIONS

These items must be answered as accurately as possible; if additional information is needed to justify an item, a continuation sheet should be used. DOE has checked "yes" or "no" on questions where the answer is known.

Negative answers will not require an explanation unless the Federal agency requests more information at a later date. Provide supplementary data for all "Yes" answers in the space provided in accordance with the following instructions:

Item 1 – Provide the name of the governing body establishing the priority system and the priority rating assigned to this project.

Item 2 – Provide the name of the agency or board which issued the clearance and attach the documentation of status or approval.

Item 3 – Attach the clearinghouse comments for the application in accordance with the instructions contained in Office of Management and Budget Circular No. A 95. If comments were submitted previously with a preapplication, do not submit them again but any additional comments received from the clearinghouse should be submitted with this application.

Item 4 – Furnish the name of the approving agency and the approval date.

Item 5 – Show whether the approved comprehensive plan is State, local or regional, or if none of these, explain the scope of the plan. Give the location where the approved plan is available for examination and state whether this project is in conformance with the plan.

Item 6 – Show the population residing or working on the Federal installation who will benefit from this project.

Item 7 – Show the percentage of the project work that will be conducted on federally-owned or leased land. Give the name of the Federal installation and its location.

Item 8 – Describe briefly the possible beneficial and harmful impact on the environment of the proposed project. If an adverse environmental impact is anticipated, explain what action will be taken to minimize the impact. Federal agencies will provide separate instructions if additional data is needed.

Item 9 – State the number of individuals, families, businesses, or farms this project will displace. Federal agencies will provide separate instructions if additional data is needed.

Item 10 – Show the Federal Domestic Assistance Catalog number, the program name, the type of assistance, the status and the amount of each project where there is related previous, pending or anticipated assistance. Use additional sheets, if needed.

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PART III: BUDGET INFORMATION

SPECIFIC INSTRUCTIONS

As in all grants programs, a budget sheet listing anticipated expenditures by cost category must be prepared. The standard form has been modified to eliminate information not required or not relevant to this program.

For the purpose of this program, Federal and non-Federal funds are defined as follows: Federal funds are those appropriated specifically for the Schools and Hospitals under NECPA, Title III, Part I, or for the Local Government and Public Care Buildings under NECPA, Title III, Part 2, or any other funding provided by the Federal Government. Non-Federal funds are any State, local or other funds available for, and directly related to the project. Applicants should note the restrictions put on expenditures of their funds by the Regulations, and must keep in mind that no Federal funds available to them may be used to qualify as any part of the matching portion.

Funds shall not be used directly or indirectly:

(1) to purchase equipment, having a value in excess of $500 (Technical Assistance only);

(2) for the purchase of real property (see definition OMB A-102, Attachment N).

Also, see 10CFR 455.60 (d) and (e) and 10CFR 455.81, 10CFR 455.82 and 10CFR 455.83 for further restrictions on the use of grant funds.

PART III: BUDGET INFORMATION Con't.

Section C. Source of Non-Federal Resources

Line 8-11 – Enter amounts of non-Federal resources that will be used on the grant. If in-kind contributions are included, provide a brief explanation on a separate sheet. (See Attachment F, Circular A–102.)

Column (a) – Enter the program titles identical to Column (a), Section A. A breakdown by function or activity is not necessary.

Column (b) – Enter the amount of cash and in-kind contributions to be made by the applicant as shown in Section A. (See also Attachment F, Circular A–102.)

Column (c) – Enter the State contribution if the applicant is *not* a State or State agency. Applicants which are a State or State agencies should leave this column blank.

Column (d) – Enter the amount of cash and in-kind contributions to be made from all other sources.

Column (e) – Enter totals of Columns (b), (c), and (d).

Line 12 – Enter the total for each of Columns (b)-(e). The amount in Column (e) should be equal to the amount on Line 5, Column (f), Section A.

Section D. Forecasted Cash Needs

Line 13 – Enter the amount of cash needed by quarter from the grantor agency during the first year.

Line 14 – Enter the amount of cash from all other sources needed by quarter during the first year.

Line 15 – Enter the totals of amounts on Lines 13 and 14.

Section E. Budget Estimates of Federal Funds Needed for Balance of the Project

Lines 16-19 – Enter in Column (a) the same grant program titles shown in Column (a), Section A. A breakdown by function or activity is not necessary. For new applications and continuing grant applications, enter in the proper columns amounts of Federal funds which will be needed to complete the program or project over the succeeding funding periods (usually in years). This Section need not be completed for amendments, changes, or supplements to funds for the current year of existing grants.

If more than four lines are needed to list the program titles submit additional schedules as necessary.

Line 20 – Enter the total for each of the Columns (b)-(e). When additional schedules are prepared for this Section, annotate accordingly and show the overall totals on this line.

Section F – Other Budget Information.

Line 21 – Use this space to explain amounts for individual direct object cost categories that may appear to be out of the ordinary or to explain the details as required by the Federal grantor agency.

Line 22 – Enter the type of indirect rate (provisional, predetermined, final or fixed) that will be in effect during the funding period, the estimated amount of the base to which the rate is applied, and the total indirect expense.

Line 23 – Provide any other explanations required herein or any other comments deemed necessary.

PART IV: PROGRAM NARRATIVE

SPECIFIC INSTRUCTIONS

The applicant shall provide a narrative description of how it proposes to conduct the technical assistance or energy conservation measures program, making use of the program narrative instructions as outlined in OMB Circular A-102 and the additional guidelines given by DOE on the next page.

The required program narrative should be attached to this form.

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PART V: ASSURANCES

SPECIFIC INSTRUCTIONS

This part contains the certifications required of applicants for Federal grants. The applicant shall certify in its application for, and acceptance and use of Federal funds, that it will comply with the laws and regulations governing these grant programs.

The Assurances section applies to the original application and to any subsequent modification or amendments.

The Applicant hereby assures and certifies that he will comply with the regulations, policies, guidelines, and requirements, including OMB Circular No. A-102 and FMC 74-4, as they relate to the application, acceptance and use of Federal funds for this federally assisted project.† Also the Applicant assures and certifies with respect to the grant that:

1. It possesses legal authority to apply for the grant, that a resolution, motion or similar action has been duly adopted or passed as an official act of the applicant's governing body, authorizing the filing of the application, including all understandings and assurances contained therein, and directing and authorizing the person identified as the official representative of the applicant to act in connection with the application and to provide such additional information as may be required.
2. It will comply with Title VI of the Civil Rights Act of 1964 (P.L. 88-352) and in accordance with Title VI of that Act, no person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity for which the applicant receives Federal financial assistance and will immediately take any measures necessary to effectuate this agreement.
3. It will comply with Title VI of the Civil Rights Act of 1964 (42 USC 2000d) prohibiting employment discrimination where (1) the primary purpose of a grant is to provide employment or (2) discriminatory employment practices will result in unequal treatment of persons who are or should be benefiting from the grant-aided activity.
4. It will comply with requirements of the provisions of the Uniform Relocation Assistance and Real Property Acquisitions Act of 1970 (P.L. 91-646) which provides for fair and equitable treatment of persons displaced as a result of Federal and federally assisted programs.
5. It will comply with the provisions of the Hatch Act which limit the political activity of employees.
6. It will comply with the minimum wage and maximum hours provisions of the Federal Fair Labor Standards Act, as they apply to hospital and educational institution employees of State and local governments.
7. It will establish safeguards to prohibit employees from using their positions for a purpose that is or gives the appearance of being motivated by a desire for private gain for themselves or others, particularly those with whom they have family, business, or other ties.
8. It will give the sponsoring agency or the Comptroller General through any authorized representative the access to and the right to examine all records, books, papers, or documents related to the grant.
9. It will comply with all requirements imposed by the Federal sponsoring agency concerning special requirements of law, program requirements, and other administrative requirements.
10. It will insure that the facilities under its ownership, lease or supervision which shall be utilized in the accomplishment of the project are not listed on the Environmental Protection Agency's (EPA) list of Violation Facilities and that it will notify the Federal grantor agency of the receipt of any communication from the Director of the EPA Office of Federal Activities indicating that a facility to be used in the project is under consideration for listing by the EPA.

† The regulation which we wish to bring to your attention is 10CFR 455.

PART V: ASSURANCES Con't.

11. It will comply with the flood insurance purchase requirements of Section 102 (a) of the Flood Disaster Protection Act of 1973, Public Law 93-234, 87 Stat. 975, approved December 31, 1976. Section 102 (a) requires, on and after March 2, 1975, the purchase of flood insurance in communities where such insurance is available as a condition for the receipt of any Federal financial assistance for construction or acquisition purposes for use in any area that has been identified by the Secretary of the Department of Housing and Urban Development as an area having special flood hazards. The phrase "Federal financial assistance" includes any form of loan, grant, guaranty, insurance payment, rebate, subsidy, disaster assistance loan or grant, or any other form of direct or indirect Federal assistance.

12. It will assist the Federal grantor agency in its compliance with Section 106 of the National Historic Preservation Act of 1966 as amended (16 U.S.C. 470), Executive Order 11593, and the Archeological and Historic Preservation Act of 1966 (16 U.S.C. 469a-1 et seq.) by (a) consulting with the State Historic Preservation Officer on the conduct of investigations, as necessary, to identify properties listed in or eligible for inclusion in the National Register of Historic Places that are subject to adverse effects (see 36CFR Part 800.8) by the activity, and notifying the Federal grantor agency of the existence of any such properties, and by (b) complying with all requirements established by the Federal grantor agency to avoid or mitigate adverse effects upon such properties.

Audit Guidelines

Grant recipients are to follow the audit requirements set forth in OMB Circular A-102, Attachment P or A-110, Attachment F. In addition, the audit organization shall follow the criteria outlined in the Wednesday, April 2, 1980, Federal Register transmitting a "single audit" guide, "Guidelines for Financial and Compliance Audits of Federally Assisted Programs."

Audit requirements for this program may be met by the institution's audit of the entire organization. Attachment P of A-102 prescribes a single audit of the entire organization rather than an audit of just our grant. The single agency audit concept should also be applied to organizations covered by A-110.

If grant recipients do not normally have periodic audits performed of the entire organizations, they must provide an audit of our specific grant. The cost of such an audit is an allowable grant cost.

Basic requirements included in the references above are that audits be performed:

1. at least bi-annually, and

2. to cover both the financial and compliance aspects.

A copy of the audit report immediately on completion must be provided to the DOE Grants Officer. These guidelines do not preclude the possibility of DOE's performance of an audit of the grant.

TA RANKING FORMULA
(Ref. page 20 of application.)

per sq.ft. per yr.

TA Ranking Number = $\frac{\text{Energy Use Index (BTU/sq.ft/year) - (estimated O\&M BTU Savings)}}{\text{Degree Days per year}}$

0.1 (only added if the building's energy audit was independently conducted)

Where:

Energy Use Index = the total energy consumption of the building for the calendar year immediately preceding the date of application, minus the estimated BTU savings after implementing operational and maintenance changes identified in the energy audit, expressed in BTUs, divided by the total gross square footage.

Degree Days per year = $\frac{65^{\circ} - (\text{high temperature} + \text{low temperature})}{2}$

for each day of the year

Degree Day data may be obtained from the Montana Energy Division, Institutional Buildings Grant Program Manager; or by calling the closest federal weather station.

RANKING OF APPLICATIONS

The Montana Energy Division will rank all Technical Assistance applications according to the TA formula given above. Those applications with the highest ranking numbers will be recommended to DOE for funding. DOE will then review our selections and send notice of grant awards directly to the institution. DNRC's responsibility will then be to monitor and review the selected projects.

If your TA application is selected you should note that solar and other renewable resource energy conservation measures are given extra weight in the ECM ranking process, and be certain that your technical analyst does a thorough review of this conversion potential in your building.

Improper use of funds will render your institution ineligible to participate in this program.

Processing of Energy Conservation Measure Application

For energy conservation measures:

Only schools and hospitals shall be considered for grant awards to implement energy conservation measures, including solar and other renewable resource measures. The amount of money available for the ECM program is determined by Federal allocation factors described in the program regulations, which include the assurance of awarding to energy conservation measures at least 70% of the combined TA and ECM funds allocated from fiscal year (FY) 1978, at least 85% of the combined allocation from FY 1979, and at least 95% of the combined allocation from FY 1980. Once the application has been received, the State Program Manager shall review it for completeness, evaluate the building involved on the basis of eligibility (see "Identification of Eligible Institutions", Part I), and forward a copy to the appropriate agency for certification (see "Certification Procedures"). Once the building(s) has been found to be eligible and has been properly certified, it shall be ranked.

Applications shall be ranked on a building-by-building basis, except where an energy conservation measure will affect more than one building. If more than one building is thus involved, data from all affected buildings shall be combined for use in the ranking formula in both categories (Schools & Hospitals) as a group. Each building or group of buildings shall receive a number based on the following formula:

ECM RANKING FORMULA
(Ref. page 21 of application.)

ECM Ranking No. = Payback Points + Conversion Source Points + Energy Type and Quantity Saved Points + Climate Points + Remaining Life Points

1) Payback Points = $38 - \left(\frac{\text{total cost of all ECMs}}{\text{total annual energy cost savings}} \times 2 - 2\right)$

2) Conversion Source Points =

$$\frac{\text{annual energy cost savings per conversion}}{\text{annual energy cost savings for all ECMs}} \times \text{source factor}$$

Source Factors: Conversion to solar = 24
Conversion to other renewable resources = 20
Conversion to coal = 16

If more than one conversion is to be made an average will be established by adding the conversion source points from each source and dividing by the number of conversions.

3) Energy Type and Quantity Saved Points =

$$\frac{\text{annual energy savings (BTU) per measure}}{\text{total annual energy savings (BTU) of all ECMs}} \times \text{fuel factor}$$

Fuel Factors: Oil = 21
LPG natural gas = 20
Electricity = 7

If more than one measure is to be implemented an average will be taken by adding all the Energy Type and Quantity Saved Points calculated for all measures and dividing by the number of measures.

4) Climate = $\frac{\text{total degree day of site}}{\text{total degree days of highest DD spot in state}} \times 11$

(Cooke City 11,316 DD)

5) Remaining Life Points = (life of the building)

for	0 - 15 years	= 0
	15 - 25 years	= 2
	25 - 50 years	= 4
	more than 50 years	= 6

Those buildings or groups of buildings with ECM applications receiving the higher ranking number will be recommended for funding to the limit of funds available.

INSTRUCTIONS FOR COMPLETING ECM RANKING FORMULA FORM

(Ref. page 21, 22 of application.)

1-7 Self-explanatory

Information for completing these forms will come from the Technical Assistance (TA) Report and ECM Ranking Formula.

8, 9, 10, 11, 12 FOR STATE USE ONLY

The state will computerize this information. A composite score of points will be generated. The generated score will be used to rank this application against other grant applications submitted in a funding cycle.

13. If YES

13a - is the total cost of your independent TA and/or previously completed ECMs. If this figure is more than the cost of your new ECMs, the figure should be the same as your new ECM cost.

14. If 13 is NO and 15 is NO

14a = cost of all ECMs
14b = always 1/2 of 14a
14c = always 1/2 of 14a

14. If 13 is YES and 15 is NO

14a = 13a + cost of new ECMs
14b = always 1/2 of 14a
14c = 14b - 13a

14. If 13 is NO and 15 is YES

14a = cost of all ECMs
14b = always 1/2 of 14a
14c = 14b - 15a

14. If 13 is YES and 15 is YES

14a = 13a + cost of new ECMs
14b = always 1/2 of 14a
14c = 14b - (13a +15a)

15. If YES

Read SEVERE HARDSHIP information

15a - when added with 14b can never be more than 90% of 14a

16-17 SELF-EXPLANATORY

TA Credit (Ref. pages 12, 24 of application.)

Section 435.82(f) of the regulations allows the costs of TA programs accomplished without federal funds to be counted toward an institution's match for an ECM grant. This section also provides that DOE may allow all or part of the TA costs to count toward the match. Applications which request such credit must be reviewed on a case-by-case basis to ensure that credit is given only for those costs which are directly related to the content of a TA program (Section 455.42).

An institution applies for TA credit by adding the cost of its TA program to the cost of the ECMs for which it is applying. The federal share is calculated on the aggregate amount and the TA cost may be considered part of the institution's match. When such credit is given for non-federally funded TAs, the TA costs are counted against the State's limit on TA grants (see Section 455.82(a)). Consider the following example:

> An institution completes a TA on its own at a cost of $6,000. The institution then decides to apply for ECMs totalling $60,000. The institution submits an ECM application totalling $66,000. The federal share is $33,000. The additional match required from the institution is $33,000-$6,000 = $27,000. The amount counted against the State's TA limit is $6,000 ÷ 2 = $3,000.

ECM Credit (Ref. page 12 of application.)

Section 455.82, as amended in Federal Register, Vol. 44 No. 207, Wednesday, October 24, 1979, allows the cost of ECMs commenced after November 8, 1978, to be wholly or partially classified in the discretion of the Secretary of DOE as matching non-federal funds for additional ECMs. In general, credit towards the institution's match may be allowed if:

1. The measures for which credit is being requested were recommended in a Technical Assistance Report that meets federal requirements.

2. They are included in the ECM application and were included in the factors upon which applications were ranked.

3. They otherwise qualify as an eligible conservation measure (simple payback between 1-15 years, payback less than useful life of buildings, etc.)

Consider the following example:

An institution completes a TA on its own at a cost of $6,000 and an ECM identified in that TA at a cost of $16,000. The institution then decides to apply for an additional ECM, identified in the TA at a cost of $10,000. The institution submits an ECM application totaling 20,000. The federal share is $10,000 (actual cost). The institution's match is $10,000, but since $22,000 has already been spent no additional match is required.

If, however, the additional ECMs applied for exceed the money already spent (for example, $30,000), the institution submits an application for $52,000. The federal share in $26,000. The additional match required is $26,000 minus $22,000, or $4,000.

INDEPENDENT TECHNICAL ASSISTANCE RANKING FOR ECM CREDIT
(Ref. pages 12, 20 of application.)

There is no guarantee that an Independent Technical Assistance (ITA) expense incurred by an institution can be used as a credit toward an Energy Conservation Measure request.

In the event the total requests for federal funding of Technical Assistance (TA) Programs exceed the authorized Federal funding limits for TA, independently funded TA money amounts being used for an ECM credit will have to be ranked with applications for Federal TA funding. If the ranking process selects the ITA as being recommended for funding at the TA level, the credit will be allowed on an ECM application request.

TA Ranking Formula

$$\text{TA Ranking Number} = \frac{\text{Energy Use Index (BTU/sq.ft./yr) - (estimated O\&M BTU savings)}}{\text{Degree Days per year}} - 0.1$$

(only added if the building's energy audit was independently conducted)

Where:

Energy Use Index = the total energy consumption of the building for the calendar year immediately preceding the date of application, minus the estimated BTU savings after implementing operational and maintenance changes identified in the energy audit, expressed in BTUs, divided by the total gross square footage;

$$\text{Degree Days per year} = \frac{65^{o} - (\text{high temperature} + \text{low temperature})}{2}$$

for each day of the year

Degree Day data may be obtained from the Montana Energy Division or by calling the closest federal weather station.

SEVERE HARDSHIP INFORMATION SHEET - SCHOOLS AND HOSPITALS ONLY
(Ref. pages 25-29 of application.)

There will be additional money available for up to 90 percent of TA and ECM costs to those schools and hospitals who qualify for severe hardship.

Only those institutions which would be selected for 50 percent funding through general TA or ECM ranking procedures shall be considered for additional severe hardship funding.

Those institutions judged eligible for severe hardship classification shall each be ranked separately.

Eligible institutions shall each receive a ranking number based upon the ranking formulas for each (hospital, public school, private nonprofit (PNP) elementary or secondary school, private nonprofit college, community college) and the impact number found by dividing the total annual energy costs for the calendar year by the total noncapitalized annual budget.

Those institutions with the highest severe hardship ranking number will receive the percentage of Federal funding shown in the Allocation Table, up to the amount of funding requested in the application. The institutions with the second highest ranking number will then, if there are severe hardship funds still remaining, be awarded the percent shown in the Allocation Table up to the amount of funding requested. The institutions with the third highest number will then be awarded, and so on, until all severe hardship funds are expended.

Computing severe hardship will identify:

1) eligibility for severe hardship and
2) composite ranking number.

Once the composite ranking number is determined, refer to the Severe Hardship Allocation Table. This table lists the percent amount of hardship funding available as determined by the applicable score. For example:

A score of 5.0 will make an applicant eligible for 20 percent additional funding above the normal 50 percent federal match. In this example 70 percent of the total money requested would be federally funded.

Allocation Table

(Ref. pages 25-29 application.)

Severe Hardship Ranking No.	Additional Severe Hardship Funds (%)	Total Federal Funds (%) (50% + Sev. Hdshp. Funds)
10.0	40	90
9.5	38	88
9.0	36	86
8.5	34	84
8.0	32	82
7.5	30	80
7.0	28	78
6.5	26	76
6.0	24	74
5.5	22	72
5.0	20	70
4.5	18	68
4.0	16	66
3.5	14	64
3.0	12	62
2.5	10	60
2.0	8	58
1.5	6	56
1.0	4	54
0.5	2	52
0.0	0	50

Severe Hardship Ranking Formula for Public Schools (Ref. page 25 of application.)

Eligible institutions shall each receive a ranking number based upon the ranking formulas for each subcategory. Severe hardship funds shall be allocated on the basis of that ranking number. If the state of Montana recommends hardship funding lower than requested by the applicant the State will request from the appicant a certification of ability to participate at the lower level of Federal funding.

The two formulas which follow will determine if a public school can apply for severe hardship funding:

1) OPI Rank No. = Total General Fund Budget for Current Fiscal Year ($)* / Total Amount Received from School Foundation for Current Fiscal Year ($)

*(compared with all other schools (High School or Elementary))

2) Budget No. Percentile = Office of Public Instruction Rank No. / Total Number of Schools (High Schools or Elementary) in Category

In terms of eligibility, those schools which have a Budget Percentile of 60 percent or greater is ineligible. Conversely, those which receive a percentile between 0 and 59 percent are eligible and then proceed to the next three computations to determine the S.H. amounts.

The energy cost impact shall be calculated for every eligible institution, regardless of subcategory, by the following formula:

Impact No. = Total Annual Energy Costs for the Current Calendar Year ($) / Total Annual Non-Capitalized Budget for the Cur. Cal. Yr. ($)

Each institution then received ranking points as follows:

Impact No.	Ranking Points
.000 - .019	1
.020 - .029	3
.030 - .039	5
.040 - .049	7
.050 and above	10

For public schools, the second ranking formula is:

Tax No. = Amount the Tax Rate is for the current fiscal year (mills)

Each public school receives ranking points as follows:

Tax No. (Percentile) Less Than State Median (rank when compared with all school districts in the State)	Ranking Points Not Eligible (0)
51 - 60	1
61 - 70	3
71 - 80	5
81 - 90	7
91 -100	10

The Severe Hardship ranking number for each public school is found by adding the ranking points from the Impact and Tax, formulas and dividing by 2:

S. H. Ranking No. (Pub. Sch.) = Impact points + Tax points / 2

Because the information required for the first two formulas will change from year to year, this data will come directly from OPI. Prior to filling out your Severe Hardship application, you should call the Program Manager, who will determine the amount, if any, for which you are eligible (449-3940).

Severe Hardship Ranking Formulas for Hospitals (Ref. page 26 of application.)

Eligible institutions shall each receive a ranking number based upon the ranking formulas for each subcategory. Severe hardship funds shall be allocated on the basis of that ranking number. If the State of Montana recommends hardship funding lower than requested by the applicant, the State will request from the applicant a certification of ability to participate at the lower level of Federal funding.

The Energy Cost Impact shall be calculated for every eligible institution, regardless of subcategory, by the following formula:

$$\text{Impact No.} = \frac{\text{Total Annual Energy Costs for the Current Calendar Year (\$)}}{\text{Total Annual Non-Capitalized Budget for the Cur. Cal. Yr. (\$)}}$$

Each institution then receives ranking points as follows:

Impact No.	Ranking Points
.000 - .019	1
.020 - .029	3
.030 - .039	5
.040 - .049	7
.050 and above	10

For hospitals, the second ranking formula is:

$$\text{Revenue No.} = \frac{\text{Net Patient Revenue (\$)}}{\text{Total Annual Non-Capitalized Budget for the Cur. Ca. Yr. (\$)}}$$

Each hospital receives ranking points as follows

Revenue No.	Ranking Points
.96 and above	Not Eligible
.90 - .95	1
.84 - .89	3
.78 - .83	5
.72 - .77	7
.71 and below	10

The Severe Hardship ranking number for each hospital is found by adding the ranking points from the Impact and the Revenue formulas and dividing the sum by 2:

$$\text{S.H. Ranking No. (Hosp.)} = \frac{\text{Impact points + Revenue points}}{2}$$

Using the above figure, turn to the allocation table to determine the extra funding, if any, for which you are eligible.

Severe Hardship Ranking Formulas for PNP Colleges (Ref. page 27 of application.)

Eligible institutions shall each receive a ranking number based upon the ranking formulas for each subcategory. Severe Hardship funds shall be allocated on the basis of that ranking number. If the State of Montana recommends hardship funding lower than requested by the applicant, the State will request from the applicant a certification of ability to participate at the lower level of Federal funding.

The Energy Cost Impact shall be calculated for every eligible institution, regardless of subcategory, by the following formula:

$$\text{Impact No.} = \frac{\text{Total Annual Energy Costs for the Current Calendar Year (\$)}}{\text{Total Annual Non-Capitalized Budget for the Cur. Cal. Yr. (\$)}}$$

Each institution then receives ranking points as follows:

Impact No.	Ranking Points
.000 - .019	1
.020 - .029	3
.030 - .039	5
.050 - .049	7
.050 and above	10

For private non-profit colleges, the second ranking formula is:

$$\text{Tuition \& Fees No.} = \frac{\text{Tuition (from full time students) + Rm.\&Bd. Fees + Special Fees (\$}}{\text{Total Annual Non-Capitalized Budget for the Cur. Fiscal Yr. (\$)}}$$

Each private non-profit college receives ranking points as follows:

Tuition & Fees No. (percentile)	Ranking Points
.59 and above	Not Eligible
.55 - .58	1
.51 - .54	3
.47 - .50	5
.43 - .46	7
.42 and below	10

The Severe Hardship ranking number for each private non-profit college is found by adding the ranking points from the Impact and Tuition & Fees formulas and dividing the sum by 2:

$$\text{S.H. Ranking No. (Pub. NP Col.)} = \frac{\text{Impact points + Tuition \& Fees Points}}{2}$$

Using the above figure, turn to the allocation table to determine the amount of extra funding, if any, for which you are eligible.

Severe Hardship Ranking Formulas for PNP Elementary and Secondary Schools (Ref. page 28 of application.)

Eligible institutions shall each receive a ranking number based upon the ranking formulas for each subcategory. Severe hardship funds shall be allocated on the basis of that ranking number. If the State of Montana recommends hardship funding lower than requested by the applicant, the State will request from the applicant a certification of ability to participate at the lower level of Federal funding.

The Energy Cost Impact shall be calculated for every eligible institution, regardless of subcategory, by the following formula:

$$\text{Impact No.} = \frac{\text{Total Annual Energy Costs for the Current Calendar Year (\$)}}{\text{Total Annual Non-Capitalized Budget for the Cur. Cal. Yr. (\$)}}$$

Each institution then receives ranking points as follows:

Impact No.	Ranking Points
.000 - .019	1
.020 - .029	3
.030 - .039	5
.040 - .049	7
.050 and above	10

For private non-profit elementary and secondary schools, the second ranking formula is:

$$\text{Tuition No.} = \frac{\text{Tuition (from full time students) + All Direct Subsidies (\$)}}{\text{Total Annual Non-Capitalized Budget for the Cur. Fiscal Yr. (\$)}}$$

Each private non-profit school receives ranking points as follows:

Tuition No. (percentile)	Ranking Points
.76 and above	Not Eligible
.70 - .75	1
.64 - .69	3
.58 - .63	5
.52 - .57	7
.51 and below	10

The Severe Hardship ranking number for each private non-profit elementary and secondary school is found by adding the ranking points from the Impact and the Tuition formulas and dividing the sum by 2:

$$\text{S.H. Ranking No. (Pub. NP Sch.)} = \frac{\text{Impact points + Tuition points}}{2}$$

Using the above figure, turn to the allocation table to determine the extra funding, if any, for which you are eligible.

Severe Hardship Ranking Formulas for Community Colleges (Ref. page 29 of application.)

Eligible institutions shall each receive a ranking number based upon the ranking formulas for each subcategory. Severe hardship funds shall be allocated on the basis of that ranking number. If the State of Montana recommends hardship funding lower than requested by the applicant, the State will request from the applicant a certification of ability to participate at the lower level of Federal funding.

The Energy Cost Impact shall be calculated for every eligible institution, regardless of subcategory, by the following formula:

$$\text{Impact No.} = \frac{\text{Total Annual Energy Costs for the Current Calendar Year (\$)}}{\text{Total Annual Non-Capitalized Budget for the Cur. Cal. Yr. (\$)}}$$

Each institution then receives ranking points as follows:

Impact No.	Ranking Points
.000 - .019	1
.020 - .029	3
.030 - .039	5
.040 - .049	7
.050 and above	10

For community colleges, the second ranking formula is:

$$\text{Tax Support No.} = \frac{\text{Total State and Local Tax Support for Cur. Fiscal Yr. (\$)}}{\text{Avg. No. of Full Time Students During 4 Qtrs. of Cur. Fiscal Yr (stu.)}}$$

Each community college receives ranking points as follows:

Tax Support No. ($/stu.)	Ranking Points
1668 and above	Not Eligible
1651 - 1667	1
1631 - 1650	3
1611 - 1630	5
1591 - 1610	7
1590 and below	10

The Severe Hardship ranking number for each community college is found by adding the ranking points from the Impact and the Tax Support formulas and dividing the sum by 2:

$$\text{S.H. Ranking No. (Com. Col)} = \frac{\text{Impact points + Tax Support points}}{2}$$

Using the above figure, turn to the allocation table to determine the amount of extra funding, if any, for which you are eligible.

Assurance of O&M Implementation (Ref. page 18 of application.)

(455.63)

The State recognizes the importance of implementing all recommended Operating and Maintenance (O&M) procedures before technical assistance programs and energy conservation measures are begun. Therefore, the State shall require certification as specified in the program regulations, that all O&M procedures recommended in the energy audit must be implemented before requesting funds for TAs, and that all O&M procedures recommended in the technical assistance report and the energy audit must be implemented before requesting funds for ECMs. Those O&M procedures recommended but not undertaken must be listed by the applicant, and a written justification for not implementing them must be given. The State of Montana will refuse to recommend funding for an institution which has failed to implement operational and maintenance changes without proper justification.

The State shall follow two additional procedures to assure the implementation and continued use of O&M procedures in institutions receiving assistance under this plan.

a) According to the Montana requirements, each participating building is required to submit reports of its fuel consumption by month for the twelve months immediately following completion of its energy audit. The reduction in consumption measured from these reports will be compared with the savings estimated to have resulted from the implementation of all O&M procedures in the building. If a significant difference between the actual and the reported savings is noted, the building operator will be contacted and the situation discussed. If the actual reduction of energy consumption is reasonably consistent with the estimated savings, then the buildings shall be judged to have implemented and retained the O&M procedures.

b) On a selective basis, buildings will be inspected for implementation of O&M procedures. A minimum of five (5) percent or ten (10) buildings in each category will be monitored or if funds permit, up to 100 percent of buildings will be monitored.

In the Department of Energy memo #17 of January 4, 1980, three acceptable reasons for not implementing O&Ms were identified as follows:

1) The O&M procedure proved not to be feasible;

2) The O&M would cost more to implement than an institution could be expected to accomplish as an O&M; or

3) The O&M involved ordering materials which had not yet arrived.

Please submit documentation which will demonstrate an acceptable justification for not implementing specific O&M measure(s) which were checked in your Energy Audit/TA Report as EXISTING.

The Department of Energy will not accept a broad categorical statement such as "We have not implemented O&Ms because of a shortage of available funds" or "Our board will consider the O&Ms in the future".

The federal Department of Energy regulations require that all O&Ms identified as existing in an EA or a TA analysis be implemented prior to submitting an application for additional assistance.

If you are applying for TA monies and your Energy Audit was performed independently (without federal funds) you must submit the following information: (Ref. page 23 of application.)

1. Two copies of the Energy Audit Workbook.
2. A signed independent EA certification
3. A list of operation and maintenance measures suggested and implemented (Ref. page 18 of application.)
4. If any operation and maintenance measures were suggested but not implemented, a written justification for not implementing each measure. (See page 29 of appendix.)

APPENDIX F

PHASE II

Rules And Regulations
Federal Register

DEPARTMENT OF ENERGY

10 CFR Part 455

Technical Assistance and Energy Conservation Measures: Grant Programs for Schools and Hospitals and for Buildings Owned by Units of Local Government and Public Care Institutions

AGENCY: Department of Energy.

ACTION: Final rule.

SUMMARY: The Department of Energy (DOE) is issuing a final regulation for cost sharing grant programs to reduce the energy use and anticipated energy costs for (1) schools and hospitals and (2) buildings owned by units of local government and public care institutions. These objectives are to be achieved by providing financial assistance for identifying energy conservation maintenance and operating procedures; conducting technical assistance programs to identify and evaluate attainable energy conservation objectives; and, for schools and hospitals, acquiring and installing energy conservation measures, including solar and other renewable resource measures. This is the second and final segment of DOE regulations for implementation of programs established pursuant to Title III of the National Energy Conservation Policy Act (NECPA), Pub. L. 95–619, 92 Stat. 3206. The first portion of the programs provides financial assistance for the conduct of preliminary energy audits and energy audits for schools, hospitals, units of local government and public care institutions pursuant to regulations published in the **Federal Register** on April 2, 1979 (44 FR 19340). Participation in both phases of the programs is voluntary. The Secretary may make grants to schools, hospitals, units of local government and public care institutions for technical assistance programs; to schools and hospitals for energy conservation measures, including solar and other renewable resource measures; and to States for defraying administrative costs.

DATES: This regulation is effective April 17, 1979. States must submit State Plans to the Secretary on or before August 15, 1979. The first grant program cycle for technical assistance and energy conservation measures, including solar and other renewable resource measures, will begin on April 17, 1979 and will end on February 1, 1980.

FOR FURTHER INFORMATION CONTACT:

Michael Willingham, or Ronald Milner, Institutional Buildings Grants Programs Division, Office of Conservation and Solar Applications, Room 4117, 20 Massachusetts Avenue, N.W., Washington, D.C. 20545 (202) 376–4149.

Lewis W. Shollenberger, Jr., or Dennis M. Moore, Office of the General Counsel, Department of Energy, Room 3224, 20 Massachusetts Avenue, N.W., Washington, D.C. 20545 (202) 376–4011.

Mark Friedrichs, Office of Policy and Evaluation, Department of Energy, Room 5316, 1200 Pennsylvania Avenue, N.W., Washington, D.C. 20461 (202) 633–8595.

SUPPLEMENTARY INFORMATION:

I. Introduction

With the issuance of this final regulation, the Department of Energy (DOE) amends Chapter II of Title 10, Code of Federal Regulations, by adding Subparts C through I to Part 455. This regulation fulfills the remaining requirements of Title III of the National Energy Conservation Policy Act (NECPA), Pub. L. 95–619, 92 Stat. 3206, which amended Title III of the Energy Policy and Conservation Act (EPCA), Pub. L. 94–163, 89 Stat. 871, by adding Parts G and H, to establish cost sharing energy conservation grant programs to fund technical assistance programs for schools, hospitals, buildings owned by units of local government and public care institutions, and to fund the acquisition and installation of energy conservation measures, including solar and other renewable resource measures, for schools and hospitals.

On January 5, 1979, DOE published a proposed regulation which described this grant progam and solicited comments from interested persons (44 FR 1580). DOE received and considered 324 written comments and the testimony of 54 persons presented at hearings held in Washington, D.C.; Chicago, Illinois; and Seattle, Washington, on January 22–24, 1979. Summaries of the major comments received, a number of which resulted in changes to the final rule, are discussed below.

On April 2, 1979, DOE published a final regulation implementing the first portion of the energy conservation grant programs established under Title III of NECPA (44 FR 19340). The first portion of these programs will provide financial assistance for the conduct of preliminary energy audits and energy audits to identify buildings suitable for further energy conservation analysis, to identify maintenance and operating changes which could save energy, and to estimate the State-wide need and potential for conserving energy in eligible institutions.

This second portion of the energy conservation grant programs authorized by Title III of NECPA provides financial assistance for schools, hospitals, units of local government and public care institutions and coordinating agencies for conducting technical assistance programs to identify energy and cost savings likely to be realized as a result of modifying maintenance and operating procedures in a building and as a result of implementing energy conservation measures, including solar and other renewable resource measures, in a building. This regulation also provides financial assistance for schools and hospitals and coordinating agencies to acquire and install energy conservation measures to reduce energy consumption or to allow the use of alternative energy sources.

II. Elements of the Program

Initially, a State must formulate a State Plan for the operation of these grant programs and have the State Plan approved by DOE. Upon approval of the State Plan, a State energy agency will receive, review and rank applications for financial assistance for eligible schools, hospitals, units of local government and public care institutions. Applicants must prepare and forward their applications to the State in accordance with this regulation and the approved State Plan. If applications are determined by the State to be eligible for assistance under this regulation and the State Plan, the State will rank all buildings covered by those applications in order of priority for funding. The State will then forward to DOE once each grant program cycle all eligible applications together with its rankings of the buildings covered by those applications. Among other things, the State will also identify those buildings proposed by the State for grant funding, based on the priority ranking, and set forth the funding, by building, recommended for each applicant.

Upon approval of State recommendations, DOE will make grant awards to applicants for up to 50 percent of the cost of a technical assistance program or energy conservation measure. In addition, DOE may make grant awards in excess of 50 percent of total costs to schools or

hospitals in a class of severe hardship in amounts recommended by the State in accordance with its State Plan for up to 90 percent of the cost of a technical assistance program or energy conservation measure. The total amount of all such hardship funding in a State may not exceed 10 percent of funds allocated to that State in a grant program cycle.

A State may also receive grants in amounts not exceeding 5 percent of all grants made in a State during a given grant program cycle for the purposes of defraying the costs of administering technical assistance programs and energy conservation measures grants.

III. Notice of Grant Program Cycle

DOE has elected to use "grant program cycles" for all NECPA Title III grant programs. For purposes of making grants for technical assistance programs and energy conservation measures, including solar and other renewable resource measures, the first grant program cycle begins on the date of publication of this regulation. State Plans under this regulation are due 120 days from the beginning of the cycle. For fiscal year 1978, NECPA authorizes appropriations in the amount of $180 million for schools and hospitals and $17.5 million for units of local government and public care institutions. Subject to the availability of these monies, Table 5 presents the amounts allocated to States for the first grant program cycle. Except as may otherwise be specified by the Secretary, this first grant program cycle for technical assistance and energy conservation measures shall end February 1, 1980.

IV. Discussion of Major Comments and Revisions

State Plan Submissions

Sections 394(a) and 400D(a) of EPCA direct the Secretary to invite State energy agencies of each State to submit State plans to DOE within 90 days after the effective date of this regulation. However, the law also permits the establishment of a longer period of time for this purpose if there is "good cause" for such action. Because the final regulation for preliminary energy audits and energy audits has been so recently issued, and since the development of State Plans in great measure depends on the results of the preliminary energy audits conducted in accordance with those final regulations, there is good cause for extending the time in which State Plans may be submitted to DOE. Accordingly, § 455.91 has been revised to permit 120 days, rather than the 90 days proposed, for their submission. This extension should permit States to conduct a sufficient number of preliminary energy audits to insure complete and comprehensive State energy planning.

Eligible Institutions and Buildings

Several comments addressed the range of institutions that may be eligible to receive grant funding. The definitions that determine which institutions are eligible for Federal grant funds are set forth in 10 CFR 455.2. States, as a result of their licensing and oversight authorities with respect to such institutions, are in the best position to apply those definitions to institutions within their jurisdictions when they review and evaluate grant applications.

Comments also addressed the range of buildings that may be eligible for Federal financial assistance. Buildings covered by applications from eligible institutions that house resources for the arts, humanities and for historic preservation (such as libraries, arts centers, etc.) in connection with schools, hospitals, units of local government and public care institutions may be eligible for financial assistance if such buildings conform to the requirements of Part 455. Although buildings owned by local educational agencies and used primarily as administrative buildings are eligible for preliminary energy audit and energy audit funding, such administrative buildings are not eligible for grants for technical assistance programs or energy conservation measures.

Energy Conservation Maintenance and Operating Procedures

An important element of these grants programs is the identification of energy conservation maintenance and operating procedures which require no significant expenditure of funds. The implementation of such procedures, once identified by an energy audit or technical assistance program, should result in substantial energy savings. Therefore, as a prerequisite to further participation in this program, the proposed regulation required applicants to implement all identified energy conservation maintenance and operating procedures prior to submitting a grant application for a technical assistance program or energy conservation measure.

This requirement has been modified in the final regulation to permit applicants to be eligible for technical assistance program or energy conservation measure grants without having implemented all energy conservation maintenance and operating procedures if satisfactory written justification for not implementing any such procedure is provided. Such justification will be considered satisfactory if it demonstrates that implementation of a maintenance and operating procedure recommended by an energy audit report or technical assistance report would violate an applicable health or safety code, would require special training for maintenance or operating personnel which cannot be completed prior to submitting a grant application, or would create other such overriding circumstances that make implementation impractical.

Technical Assistance Analyst Qualifications

NECPA directs that DOE establish factors which may be used by a State in prescribing criteria for identifying persons qualified to conduct technical assistance programs. It is essential that only those individuals possessing the relevant background, training and experience be considered as qualified technical assistance analysts. Therefore the proposed regulation required as a minimum that technical assistance analysts have experience in energy conservation and be registered professional engineers or architect-engineer teams. Numerous comments were received regarding these qualification factors. Among other things, it was suggested that the qualifications were overly restrictive and that they excluded certain groups from participating in the technical assistance phase of the program. Others suggested that States should be responsible for establishing programs for qualifying technical assistance analysts. A number of comments stated that many architects and architectural firms have the necessary experience to perform technical assistance programs, and suggested that architects be permitted to conduct a technical assistance program independently.

It is the intent of this regulation to establish minimum qualifications for technical assistance analysts to insure that participating institutions select individuals or firms able to perform the very complex and detailed technical assistance program. Accordingly, the final regulation specifies that the technical assistance analyst should be a registered professional engineer or, ideally, an architect and an engineer working as a team. However, the final regulation has been modified to permit a State to specify such alternative qualifications as it may deem appropriate and as are included in its approved State Plan. Such alternative

qualifications must insure that the technical assistance analyst has sufficient experience and training to perform all of the minimum requirements of a technical assistance program.

An architect-engineer team provides an especially suitable combination of professional skills to perform the comprehensive analysis of the building or buildings required for a technical assistance program. Several comments raised questions concerning the effect of the minimum requirements for technical assistance analysts and the contractual relationship between architectural firms and engineering firms which desire to perform jointly technical assistance programs. No prior relationship is required nor was it DOE's intent to preclude either member of the team, individually, from functioning as the prime contractor for a technical assistance program.

Several comments pointed out that the provision which requires that technical assistance analysts be free from conflicting financial interests may prevent technical assistance analysts from performing the detailed design functions which may be necessary under the energy conservation measures phase of these programs. This provision is intended to exclude those individuals having a financial interest in the products or equipment acquired and installed under an energy conservation measures grant. A State must establish procedures, as a part of its State Plan, to implement these requirements. These procedures must also exclude any other individuals having financial interests which conflict with the proper performance of their duties. This requirement should not be construed to preclude technical assistance analysts from performing detailed design or inspection services under the energy conservation measures phase of these programs.

Technical Assistance Procedures

It is essential that a technical assistance program consist of a thorough survey and analysis of both the building envelope and the building's energy-using systems. A few comments suggested that thermographic inspections of the building be required as part of a technical assistance program. While such methods are a valuable tool in analyzing a building, the final regulation does not specify any methods to be utilized as part of a technical assistance program. It is left to the discretion of the technical assistance analyst to select the methods which, in the analyst's judgment, are the most appropriate for the building which is being analyzed.

Eligible Energy Conservation Measures

Several comments suggested that DOE expand the grant programs for schools and hospitals to fund experimental energy conservation measures. A list of previously demonstrated energy conservation measures, including solar and other renewable resource measures, is set forth in § 455.52. Solar measures eligible for funding include both active and passive solar energy systems, as well as other renewable resource measures. This list is not all inclusive. Other measures identified in a technical assistance program or an energy audit performed pursuant to Subpart C of 10 CFR Part 450, which have an average simple payback of more than 1 year and less than 15 years, may be included in any grant application. A complete description of such measures must accompany the application. The description must include calculations and other technical data which indicate the projected cost and energy savings of such measures. An experimental energy conservation measure for which an applicant cannot adequately project costs and energy savings will not be considered for funding.

Consideration of Solar and Other Renewable Resource Measures

In view of comments received, and due to the desirability of increased utilization of solar energy to reduce consumption of non-renewable energy resources, the final regulation reflects greater emphasis on conversions to solar and other renewable resource systems, where appropriate. Specifically, certain basic data regarding a building's potential for solar applications will be collected during the preliminary energy audit and energy audit phase of the program. Upon analysis of preliminary energy audit data, the State should be able to specify in its State Plan the extent to which, and by which methods, utilization of solar systems will be encouraged within that State. Each technical assistance program must include an evaluation of the building's potential for solar conversion and an identification of any known zoning ordinances and building codes which may place restrictions on or barriers to the installation of solar energy systems. It is intended that, initially, the technical assistance analyst will evaluate the data collected during the preliminary energy audit and energy audit phase of the program. If, upon completion of this initial evaluation, it is determined that the building has potential for conversion to solar or other renewable resource measures, the technical assistance analyst will undertake a more detailed analysis of the costs and energy cost savings associated with the acquisition and installation of such measures.

Leased Equipment

Several comments suggested that the installation and use of equipment which is normally leased, such as computer control systems, qualify as an eligible energy conservation measure. The final regulation has been changed to permit grants for the costs of installing and connecting leased equipment, such as a computer-operated energy monitoring or control system. However, the recurring lease costs associated with leased equipment, which typically include maintenance and service costs, are not eligible for funding. To calculate the simple payback period for leased equipment, the procedure set forth in § 455.52(w) shall be used. This procedure is required to insure that recurring lease costs are considered in the overall evaluation of such a proposed measure.

Starting Date for Eligible Programs and Measures

Several comments requested a change in a provision of the proposed regulation to permit the funding of technical assistance programs and energy conservation measures, including solar and other renewable resource measures, begun prior to November 9, 1978. The conference committee report accompanying NECPA indicates that project costs incurred prior to November 9, 1978 are not to be considered eligible for grant funding. Accordingly, this suggestion has not been adopted. However, expenditures for a technical assistance program commenced on or after November 9, 1978, may be wholly or partially classified by the Secretary as non-Federal funds for the purposes of matching a grant for the acquisition and installation of energy conservation measures identified by such technical assistance program.

Applicant's Submissions to States

A number of comments raised questions concerning the manner in which institutions are to file applications for technical assistance program grants and energy conservation measures grants. The requirements governing applications for grant funds are contained in Subpart E of Part 455 and have been modified only slightly from their proposed form. Since applicants must forward grant

applications to a State for review, evaluation and ranking, applicants may also be required to submit their grant applications in conformity with any additional procedures or requirements prescribed by the State in the State Plan. This regulation, however, does not prohibit two or more institutions from submitting a single application to the State. Indeed, DOE encourages States to permit institutions to apply for grant funds through a coordinating agency (such as the State, a State hospital or school facilities agency, or a regional or district organization representing schools or hospitals) which could act as an agent for institutions whose buildings are covered by the coordinating agency's application. The use of coordinating agencies may: (1) Reduce the administrative workload for institutions, (2) introduce economies of scale for applicants, (3) allow institutions, which might otherwise lack the expertise or resources, to participate, and (4) expedite the processing of applications and the administration of the program.

State Evaluation and Ranking of Grant Applications

The State evaluation and ranking requirements set forth in §§ 455.70 and 465.71 elicited a number of comments and requests for clarification. These provisions have been revised primarily to incorporate several suggested changes to the ranking criteria and to clarify the procedure to be used for ranking applications for technical assistance programs and energy conservation measures.

The evaluation and ranking process prescribed by Subpart F requires the State to make two determinations. First, a State will review and evaluate an application to determine whether the applicant is eligible for financial assistance and thus a candidate for inclusion in the State's ranking process. Eligible applicants must conform to all of the requirements of Subparts C, D and E of Part 455, the requirements of the approved State Plan, any State environmental laws, and any other applicable laws or regulations. Applications of schools and hospitals must receive certifications from the State school or hospital facilities agency, as the case may be, in order to be eligible for Federal assistance. This certification process will take place concurrently with the State's evaluation and ranking in a manner such that no unnecessary delay results. An applicant that does not conform to these requirements or that fails to receive certification is not eligible for Federal assistance and its application should be returned immediately to it, together with an explanation of the application's deficiencies.

Second, a State will rank buildings for which an eligible applicant has requested financial assistance to determine, in accordance with the criteria established in its State Plan, which buildings should be recommended for up to 50 percent funding. Although a few comments recommended that States rank metered facilities rather than buildings, DOE has retained the more refined requirement of a building-by-building ranking, since estimated energy consumption for individual buildings can be calculated using standard engineering procedures.

Section 455.71(a) establishes detailed criteria for ranking buildings for technical assistance programs. Buildings will be ranked on the basis of energy conservation potential as indicated by energy audits of those buildings and in accordance with the methods prescribed by the State Plan. Preference will be given to buildings for which an energy audit was completed without the use of Federal funds in the case of buildings having equivalent energy conservation potential.

The ranking criteria applicable to energy conservation measures set forth in § 455.71(b) have been modified only slightly to reflect, among other things, a preference for savings of oil over savings of natural gas. Weights for each prescribed criterion will be assigned by the State.

The product of the State ranking process for technical assistance programs and energy conservation measures will be three lists of buildings ranked in order of descending priority based upon the criteria prescribed by § 455.71. There will be a separate list of buildings for technical assistance programs for units of local government and public care institutions, for technical assistance programs for schools and hospitals, and for energy conservation measures for schools and hospitals.

At the request of an applicant for an energy conservation measure grant, a group of buildings may be ranked as a single building if the application requests funding for the acquisition and installation of a single energy conservation measure which directly involves all of the buildings. This permits applicants the option to seek funding for measures that affect more than one building. In such cases, an applicant will submit the average simple payback of the single measure proposed for all of the buildings affected by that measure as well as averaged data for all the buildings for the other ranking criteria. States will rank the buildings covered by such an application based upon those averages.

Within each list, a State will indicate the ranking and the amount of financial assistance requested for each eligible building. The State will also indicate the amount of funding recommended by the State for each building. Where the amount recommended for any building by the State is less than the amount requested by the applicant, the State shall also indicate the reason for such recommendation. Those buildings ranking highest on the list will receive financial assistance within the amount of funds allocated for each State for grants up to 50 percent of eligible costs.

The State will perform two additional reviews of each list of school and hospital buildings. First, the State must assure that neither schools nor hospitals are recommended for more than 70 percent of the total funds allocated for technical assistance programs and energy conservation measures.

Second, the State must evaluate school and hospital buildings for which "severe hardship" claims have been made. With respect to those school and hospital applications requesting such funding, only those applications which would otherwise qualify for grants up to 50 percent may be considered by the State. For such qualified applications, the State must perform a separate evaluation of the relative need of each applicant. The evaluation must be performed in accordance with the procedures established by the State in its State Plan in accordance with the criteria set forth in § 455.72(d)(2). The results of this evaluation will determine the amount of additional Federal funding, in excess of 50 percent, for which each applicant is qualified. After this evaluation has been completed, buildings in a class of severe hardship shall be recommended for funding in descending order of their energy saving potential, determined pursuant to §§ 455.71 (a) and (b). These results will be recorded within each list for schools and hospitals by indicating: (1) The amount of additional hardship funding requested for each building by each application qualified for hardship funding; and (2) the amount of hardship funding recommended by the State based upon relative need, as determined in accordance with its State Plan, to the limit of the hardship funds available.

Requests for hardship funding, as determined by the State and indicated in the State ranking, will be approved by DOE to the extent that the total of all

such requests for hardship funding does not exceed 10 percent of the total allocation of funds to the State for schools and hospitals in the applicable grant programs cycle.

Prior to forwarding applications to the Secretary, each State must certify that each institution recommended for funding in any amount has given its assurance that it is willing and able to participate in the program based on the amounts recommended by the State and set forth in the State's ranking of all applications pursuant to § 455.71.

It is anticipated that in some cases the amounts requested by eligible applicants will be less than the total amount allocated to the State in a particular grant program cycle. In such cases, the State is exempt from the ranking requirements of § 455.71. With respect to eligible applications for schools and hospitals, the State is exempt from the ranking requirements only if the total amount requested for grants up to 50 percent is less than or equal to the funds available for such grants and the total amount recommended for hardship funding is less than or equal to the amount reserved by the State for that purpose. Unobligated funds remaining at the close of a grant program cycle will be reallocated, if available, to all States in the succeeding grant program cycle.

Economic Analysis Ranking Factor

NECPA requires that DOE establish criteria for ranking applications for energy conservation measures, including solar and other renewable resource measures. The primary ranking factor selected for this phase of the program is the measure's cost-effectiveness. The proposed regulation specified a simple payback methodology for this ranking factor. A number of comments were received regarding the use of this methodology. Most of the comments indicated that simple payback is not as accurate in determining the cost-effectiveness of a measure as is life-cycle costing. A life-cycle costing methodology considers the time value of money, fuel price escalations and future operating, maintenance and other costs over the life of the building or measure. The use of discounted payback was also suggested. Because simple payback provides only an approximate indication of actual cost-effectiveness, DOE has undertaken the development of a life-cycle costing methodology which it currently plans to adopt for evaluating energy conservation measures under this program. However, this methodology will not be available for use during the first grant program cycle. Therefore, the regulation specifies the use of the simple payback methodology, but encourages institutions to obtain a life-cycle cost analysis for use in their decision-making process for the first grant program cycle.

Several comments were also received regarding the 15-year simple payback period limitation on energy conservation measures, including solar and other renewable resource measures. Comments were approximately balanced between those favoring a shorter payback period limitation and those favoring a longer payback period limitation. Other comments suggested that States be responsible for determining the limitation. No change has been made to the final regulation. The 15-year simple payback limitation on eligible measures approximates the limit that would result if measures were determined to be cost-effective by a life-cycle cost analysis (assuming a 10-percent real discount rate, current fuel price forecasts and a 25-year useful life of the measure or building). Since DOE intends to amend this regulation to substitute life-cycle cost analysis for simple payback, this provision may be deleted at that time.

State Forwarding of Grant Applications

A number of comments suggested changes to the requirement of § 455.72 that States forward grant applications to DOE only once each grant program cycle. Some comments proposed to permit States to forward applications for financial assistance continuously or at several times during the grant program cycle to reduce administrative burdens which might delay the attainment of energy savings. Since NECPA specifically limits the frequency of application submittals, this provision has not been altered. Further, this single submittal is likely to result in a more equitable allocation of the available funds by requiring the simultaneous evaluation of all applications received during a single grant program cycle.

Grant Awards

Several comments requested that the regulations clarify whether additional funding will be available to an applicant in the same or a subsequent grant program cycle to complete a technical assistance program or energy conservation measure that has already been funded by a grant. Section 455.80 has been amended to specify that no additional assistance will be available to fund cost overruns. In order to promote accurate cost calculation and thereby assure that only cost-effective technical assistance programs and energy conservation measures, including solar or other renewable resource measures, receive Federal assistance, DOE shall award only one grant for any technical assistance program or energy conservation measure for any building.

State Administrative Costs

The subject of grant awards to defray State expenses incurred in administration of this program elicited numerous comments from States and institutions. Several comments favored the proposed provision allowing 50 percent matching grants to States in amounts not exceeding 5 percent of all grants awarded to institutions within a State. Some comments, however, suggested awarding such grants as early as possible in the grant program cycle to help cover the significant expenditures required for a State to develop a State Plan and to establish its system for accepting and reviewing grant applications before they are submitted to DOE. It was also suggested that DOE raise the allowable percentage of funding for the States.

DOE still anticipates that 5 percent of the grants awarded within a State will provide the State with adequate funding, when coupled with State matching funds, to administer effectively this phase of the program. However, §§ 455.62 and 455.83 have been revised to permit earlier grant awards for this purpose. As revised, a State may apply for an administrative expense grant concurrently with submission of its State Plan. For subsequent grant program cycles, a State may apply for an administrative expense grant immediately upon publication by DOE of the amounts allocated for among the States for that grant program cycle. Up to 2 percent of the amounts allocated to the State for grants for technical assistance programs and energy conservation measures will be available for administrative expense grants. For the first grant program cycle, DOE plans to award these 2 percent grants for State administrative costs at the time the State Plan is approved.

Subsequent to this initial application for administrative costs, States may forward a second application to DOE during each grant program cycle at the time the State forwards all the grant applications eligible for technical assistance programs and energy conservation measures. At that time, States may apply for an administrative expense grant up to an amount equal to the difference between the initial amount awarded for an administrative expense grant for that grant program cycle and 5 percent of the total of all

grants recommended for institutions in that State in the same grant program cycle. All grants for State administrative expenses are subject to the 50 percent matching requirements. The total of all amounts requested to defray State administrative expenses plus the total of all amounts recommended to fund technical assistance programs and energy conservation measures must be less than or equal to the total amount allocated for the State.

The limitations on State administrative expenses set forth in § 455.83 were also revised pursuant to comments received. States' expenses may now include the acquisition of services, such as computer, printing or other services, directly supporting the State's administration of the grant program. In addition, the cost limit on any single item of equipment acquired was raised from $200 to $300. Items costing in excess of $300 may only be purchased with the express consent of the Secretary.

Allocation Formula

The formula established for allocating funds among the States for schools and hospitals and for units of local government and public care institutions is designed to reflect the relative need for financial assistance of each State. The population and climate of each State is considered to be the best indicator of need, because these two factors tend to reflect the number of buildings eligible for assistance and the level of energy use within such buildings, respectively. Total energy use of the eligible institutions within any State is expected to be approximately in direct proportion to the product of these factors. Bureau of Census estimates were used as the basis for all population data. Population-weighted State averages for heating and cooling degree days, as determined by the National Oceanic and Atmospheric Administration, were used to indicate climate. Although heating and cooling degree days do not precisely reflect the different energy requirements of buildings, they are the only indicators of climate currently available on a population-weighted basis for all States. DOE is examining possible alternatives to the use of heating and cooling degree days in response to comments concerning the formula. These alternatives will not be available for use in computing State allocations during the first grant program cycle. If an alternative measure of climate is developed which more precisely reflects actual energy use and the potential for energy conservation, the allocation formula established by these rules will be appropriately amended at that time.

Fuel cost is used in the allocation formula to reflect the special needs of those regions where the price of energy is somewhat high.r than the national average. And, finally, a portion of the available funds is allocated equally among all States in order to reflect the minimum requirements necessary to participate in the program and to assure that no State (except the District of Columbia and the eligible territories) receive less than 0.5 percent of the total amounts appropriated, as required by section 398 of EPCA.

A number of comments stated that the formula for allocating funds among States was incorrect and that the allocation factors given in Table 4 of the proposed regulation could not be derived with the data and formula given. The regulations have been changed to clarify the factors in the allocation formula. The denominator of the fuel cost factor is the summation of the fuel cost numerators of all States. The denominator of the population-climate factor is the summation of the population-climate numerators of all States. In addition, there were several errors in the climate data given in Table 3 of the proposed regulation. The correct data for fuel cost, population and climate are set forth below in Tables 1, 2 and 3, respectively. New allocation factors appear in Table 4, and the allocation of funds among States for local government and public care buildings and for schools and hospitals for the first grant program cycle are given in Table 5.

Table 1.—*Oil Import Price: 15.32*

[Demand Region Average Retail Price Summary in 1978 $/Million Btu's]

Sector (fuel)	Demand regions									
	Nw.-Eng	N Y /N J.	Mid-Atl.	S.-Atl.	Midwest	S.-West	Central	N.-Cntrl.	West	N.-West	Total
Residential	5 11	5 86	6 14	7 67	4 56	5 20	4 41	4.10	5.59	4 82	5 39
(Elect.)	13 31	15 91	13 89	11 05	12.00	11.87	12 70	9 65	12 66	5.83	11.71
(Dist.)	3 69	3 97	4 16	4 23	3 79	3 90	3 69	3 87	3 85	3 85	3 93
(LG)	3 90	4 01	4 32	4 32	3 99	3 97	3 91	4 07	3 84	3 84	4 04
(Coal)	2 07	1 95	1 84	1 97	1 75	1 63	1 68	1 37	1 75	1 76	1 82
(NG)	4 53	4 13	3 56	3 15	3 11	2 39	2 11	2 26	3 35	3 65	3 09
Commercial	4 78	5 45	5 45	6 65	5 15	6 02	6 05	5 26	5 85	4 22	5 85
(Elect.)	13 22	17 69	13 31	11 18	11 98	11 26	12 43	8 80	11 71	5 81	12 01
(Dist.)	3 84	3 71	3 76	3 76	3 80	3 84	3 51	3 84	3 56	3 56	3 66
(Resid.)	2 87	2 96	3 27	2 90	3 12	2 97	3 10	3 01	2 92	2 85	2 99
(LG)	3 27	3 27	3 27	3 27	3 49	3 27	3 46	3 47	3 27	3 27	3 38
(Coal)	2 07	1 95	1 84	1 97	1 75	1 63	1 68	1 37	1 75	1 76	1 82
(Asphalt)	3 18	3 18	3 18	3 17	3 20	3 13	3 15	3 19	3 07	3 07	3 15
(NG)	3 86	3 53	3 11	2 63	2 78	2 46	3 48	3 13	2 83	3 05	2 94
Raw material [1]	3 43	3 35	3 18	2 92	3 25	3 27	3 28	3 20	3 06	2 92	3 22
(LG)	3 61	3 61	3 61	3 58	3 59	3 54	3 52	3 56	3 44	3 44	3 54
(Oil)	3 18	3 18	3 18	3 17	3 20	3 13	3 15	3 19	3 07	3 07	3 15
(NG)	3 29	2 83	2 69	2 19	2 44	2 16	3 10	2 65	2 44	2 37	2 33
Industrial [2]	4 66	4 54	3 92	4 96	3 68	2 98	4 79	3 16	3 85	3 28	3 79
(Elect.)	10 97	9 47	10 57	9 40	9 37	9 57	10 55	7 30	9 98	3 66	9 29
(Dist.)	3 64	3 89	3 98	3 85	3 60	3 83	3 50	3 68	3 56	3 56	3 67
(Resid.)	2 92	3 06	3 19	2 87	3 10	2 96	3 07	2 96	2 92	2 87	2 99
(LG)	3 66	3 74	3 95	3 96	3 82	3 70	3 78	3 65	3 69	3 89	3 79
(Coal)	2 07	1 95	1 84	1 97	1 75	1 63	1 68	1 37	1 75	1 76	1 78
(Met Coal [3])	2 16	2 08	1 97	2 10	2 02	2 12	1 95	2 21	2 59	2 70	2 03
(Naphtha)	3 61	3 61	3 61	3 58	3 59	3 54	3 52	3 56	3 44	3 44	3 56
(NG)	3 29	2 83	2 69	2 24	2 44	2 16	3 10	2 65	2 44	2 37	2 31
Transportation	5 74	5 79	5 67	5 63	5 67	5 22	5 52	5 49	5 38	5 42	5 55
(Elect.)	12 44	14 25	12 35	10 33	10 61	10 64	11 74	8 59	11 37	4 96	13 22
(Dist.)	4 79	4 84	5 00	4 99	4 75	4 77	4 65	4 82	4 71	4 71	4 82
(Resid.)	2 92	3 06	3 19	2 87	3 10	2 96	3 07	2 96	2 92	2 87	2 99
(LG)	3 27	3 27	3 27	3 27	3 49	3 27	3 46	3 47	3 27	3 27	3 31
(Gasoline)	6 05	6 27	6 03	5 94	5 96	5 73	5 63	5 87	6 01	6 02	5 96
(Jet Fuel)	4 12	4 23	4 48	4 54	4 05	4 16	3 93	4 16	4 10	4 10	4 22
Average price	5 16	5 62	5 08	5 76	4 67	3 83	5 01	4 40	5 11	4 42	4 82

[1] Liquid gas in the raw material sector includes liquid gas feedstock
[2] Met Coal includes 70% premium coal and 30% bituminous low sulfur coal
[3] Industrial sector here does not include refineries.

Source: Energy Information Administration Prepared for the Administrator's Annual Report, 1977 (1985 Series C projections)

Table 2

State	Population (in thousands)
Alabama	3,665
Alaska	382
Arizona	2,270
Arkansas	2,109
California	21,520
Colorado	2,563
Connecticut	3,117
Delaware	582
Dist. of Columbia	702
Florida	8,421
Georgia	4,970
Hawaii	867
Idaho	831
Illinois	11,229
Indiana	5,302
Iowa	2,870
Kansas	2,310
Kentucky	3,428
Louisiana	3,841
Maine	1,070
Maryland	4,144
Massachusetts	5,809
Michigan	9,104
Minnesota	3,965
Mississippi	2,354
Missouri	4,778
Montana	753
Nebraska	1,553
Nevada	610
New Hampshire	822
New Jersey	7,336
New Mexico	1,166
New York	18,084
North Carolina	5,469
North Dakota	643
Ohio	10,690
Oklahoma	2,766
Oregon	2,329
Pennsylvania	11,862
Rhode Island	927
South Carolina	2,848
South Dakota	686
Tennessee	4,214
Texas	12,487
Utah	1,228
Vermont	476
Virginia	5,032
Washington	3,612
West Virginia	1,821
Wisconsin	4,609
Wyoming	390
American Samoa	28
Guam	100
Puerto Rico	2,951
Virgin Islands	83
U.S. total	217,820

Table 3

State	Heating degree days	Cooling degree days
Alabama	2,695	1,999
Alaska	12,012	8
Arizona	2,298	2,824
Arkansas	3,214	1,892
California	2,728	669
Colorado	7,004	336
Connecticut	5,130	507
Delaware	4,780	1,021
Dist. of Columbia	4,750	1,415
Florida	704	3,368
Georgia	2,684	1,659
Hawaii	0	5,528
Idaho	8,917	415
Illinois	6,058	950
Indiana	5,713	952
Iowa	6,834	876
Kansas	4,900	1,543
Kentucky	4,414	1,254
Louisiana	1,701	2,536
Maine	8,002	222
Maryland	4,782	1,015
Massachusetts	6,232	487
Michigan	8,739	593

Table 3—Continued

State	Heating degree days	Cooling degree days
Minnesota	8,729	473
Mississippi	2,411	2,223
Missouri	5,024	1,332
Montana	8,292	239
Nebraska	6,347	1,095
Nevada	4,970	1,500
New Hampshire	7,535	297
New Jersey	5,470	877
New Mexico	4,766	972
New York	5,899	577
North Carolina	3,392	1,454
North Dakota	9,484	421
Ohio	5,779	797
Oklahoma	3,508	2,003
Oregon	5,254	193
Pennsylvania	5,755	723
Rhode Island	5,924	445
South Carolina	2,897	1,885
South Dakota	7,581	801

Table 3—Continued

State	Heating degree days	Cooling degree days
Tennessee	3,801	1,458
Texas	2,015	2,669
Utah	6,580	630
Vermont	7,973	293
Virginia	4,286	1,113
Washington	5,752	171
West Virginia	5,106	849
Wisconsin	7,531	541
Wyoming	7,895	326
American Samoa	0	5,325
Guam	0	5,011
Puerto Rico	0	4,907
Virgin Islands	0	
		5,427
U.S. Total	270,449	77,280

Table 4

State	0.07/n + 0.1(Stc)/Nfc + 0.83(SP)(SC)/(NPC) = Allocation Factor			
Alabama	.0013	.0021	.0112	.0146
Alaska	.0013	.0016	.0030	.0058
Arizona	.0013	.0019	.0073	.0104
Arkansas	.0013	.0014	.0070	.0097
California	.0013	.0019	.0478	.0507
Colorado	.0013	.0016	.0123	.0152
Connecticut	.0013	.0019	.0135	.0166
Delaware	.0013	.0019	.0022	.0053
Dist. of Columbia	.0013	.0019	.0029	.0060
Florida	.0013	.0021	.0223	.0257
Georgia	.0013	.0021	.0147	.0181
Hawaii	.0013	.0019	.0020	.0052
Idaho	.0013	.0016	.0040	.0069
Illinois	.0013	.0017	.0512	.0542
Indiana	.0013	.0017	.0230	.0260
Iowa	.0013	.0018	.0144	.0175
Kansas	.0013	.0018	.0097	.0128
Kentucky	.0013	.0021	.0126	.0160
Louisiana	.0013	.0014	.0106	.0135
Maine	.0013	.0019	.0057	.0089
Maryland	.0013	.0019	.0156	.0188
Massachusetts	.0013	.0019	.0253	.0285
Michigan	.0013	.0017	.0434	.0464
Minnesota	.0013	.0017	.0237	.0267
Mississippi	.0013	.0021	.0071	.0105
Missouri	.0013	.0018	.0198	.0229
Montana	.0013	.0016	.0042	.0071
Nebraska	.0013	.0018	.0075	.0106
Nevada	.0013	.0019	.0023	.0055
New Hampshire	.0013	.0019	.0042	.0074
New Jersey	.0013	.0021	.0303	.0336
New Mexico	.0013	.0014	.0044	.0070
New York	.0013	.0021	.0774	.0807
North Carolina	.0013	.0021	.0172	.0206
North Dakota	.0013	.0016	.0041	.0070
Ohio	.0013	.0017	.0457	.0487
Oklahoma	.0013	.0014	.0099	.0128
Oregon	.0013	.0016	.0083	.0112
Pennsylvania	.0013	.0019	.0500	.0531
Rhode Island	.0013	.0019	.0038	.0070
South Carolina	.0013	.0021	.0085	.0119
South Dakota	.0013	.0018	.0038	.0067
Tennessee	.0013	.0021	.0144	.0178
Texas	.0013	.0014	.0281	.0407
Utah	.0013	.0018	.0058	.0087
Vermont	.0013	.0019	.0025	.0057
Virginia	.0013	.0019	.0177	.0208
Washington	.0013	.0016	.0139	.0168
West Virginia	.0013	.0019	.0071	.0102
Wisconsin	.0013	.0017	.0242	.0272
Wyoming	.0013	.0016	.0021	.0050
American Samoa	.0013	.0018	.0001	.0032
Guam	.0013	.0019	.0003	.0035
Puerto Rico	.0013	.0021	.0094	.0128
Virgin Islands	.0013	.0021	.0003	.0036
U.S. Total	.0700	.1000	.8300	1.0000

Table 5

State	Allocation Factor	Schools & [1] Hospitals	Units of Local Government & Public Care Institutions
Alabama	0146	$2,825,625	$255,269
Alaska	0059	1,059,528	103,010
Arizona	0104	1,876,158	182,404
Arkansas	0097	1,744,065	169,562
California	0507	9,130,947	887,731
Colorado	0152	2,741,280	266,513
Connecticut	0166	2,994,044	291,088
Delaware	0053	960,930	93,414
Dist of Columbia	0060	1,072,309	104,252
Florida	0257	4,627,242	449,871
Georgia	0181	3,255,298	316,487
Hawaii	0052	933,898	90,796
Idaho	0069	1,235,291	120,107
Illinois	0542	9,756,588	948,517
Indiana	0260	4,677,807	454,787
Iowa	0175	3,152,824	306,525
Kansas	0128	2,304,189	224,018
Kentucky	0160	2,886,435	280,626
Louisiana	0195	2,434,027	236,642
Maine	0089	1,601,455	155,697
Maryland	0188	3,379,463	328,558
Massachusetts	0295	5,129,224	498,676
Michigan	0464	8,357,619	812,546
Minnesota	0267	4,812,300	467,863
Mississippi	0105	1,868,195	183,575
Missouri	0229	4,118,238	400,364
Montana	0071	1,272,836	123,748
Nebraska	0106	1,915,307	186,210
Nevada	0055	986,773	95,936
New Hampshire	0074	1,324,786	128,799
New Jersey	0396	6,055,483	588,728
New Mexico	0070	1,267,691	123,248
New York	0807	14,531,860	1,412,870
North Carolina	0206	3,714,978	361,178
North Dakota	0070	1,266,401	123,122
Ohio	0467	8,773,118	852,942
Oklahoma	0126	2,268,769	220,526
Oregon	0112	2,007,741	195,197
Pennsylvania	0531	9,566,916	930,117
Rhode Island	0070	1,262,250	122,719
South Carolina	0119	2,139,013	207,960
South Dakota	0067	1,201,941	116,855
Tennessee	0178	3,206,416	311,745
Texas	0407	7,334,243	713,051
Utah	0087	1,557,540	151,424
Vermont	0057	1,025,966	99,747
Virginia	0208	3,747,870	364,376
Washington	0168	3,027,809	294,370
West Virginia	0102	1,836,072	178,507
Wisconsin	0272	4,896,400	476,039
Wyoming	0050	895,907	87,102
American Samoa	0032	584,782	56,854
Guam	0035	626,017	60,863
Puerto Rico	0128	2,297,382	223,357
Virgin Islands	0036	653,839	63,568
U.S. Total	1.0000	180,000,100	17,499,950

[1] Allocations are subject to availability of funds.

Several comments expressed doubt as to whether the formula set forth in § 455.101, allocating appropriations among the States, conformed to the requirements of sections 398 and 400H of EPCA. The formula fully complies with the requirements of the law. Pursuant to section 400H of EPCA, the Secretary must allocate grants for units of local government and public care institutions among the States based upon the population and climate of each State and such other factors as the Secretary deems appropriate. The Secretary must also assure that the funds appropriated for grants to schools and hospitals are allocated among the States on the basis of a formula to be prescribed by rule in accordance with the provisions of section 398 of EPCA. Since population and climate factors are to be the principal basis for allocating funds for schools and hospitals, as well as for units of local government and public care institutions, DOE has determined that it is equitable and appropriate to use the same formula for allocating among the States all funds appropriated under Title III for technical assistance programs and energy conservation measures. In conformity with the requirements of section 398 of EPCA, 10 percent of the amounts available will be allocated taking into account energy costs. Another 80 percent of the amounts available will be allocated taking into account the population and climate of each State. DOE has decided to allocate the remaining 10 percent of the available funds so that 7 percent will be divided equally among all States and the remaining 3 percent will be allocated on the basis of population and climate, bringing the total percentage allocated on the basis of population and climate to the 83 percent figure set forth in § 455.101. This formula is used to assure that no eligible State receives less than 0.5 percent of the funds allocated among the States.

The additional requirement to allocate 10 percent of the total available for schools and hospitals determined to be in a class of severe hardship (for additional financial assistance in excess of the 50 percent Federal share, up to 90 percent of the costs of technical assistance programs and energy conservation measures) is satisfied by the requirement that each State reserve 10 percent of its allocation for schools and hospitals each year to provide this additional financial assistance.

State and Grantee Reporting Requirements

Sections 455.63 and 455.73 have been revised in the final regulation to include the requirement that States and grantees which have received financial assistance for energy conservation measures submit regular reports on energy use. These reports are intended to indicate the energy use reductions

that have been realized as a result of energy conservation maintenance and operating procedures and energy conservation measures. This requirement was added to insure that the States and DOE have available accurate information on the actual energy savings resulting from these programs. Further, these reports will encourage participating institutions to establish sound, ongoing energy management practices. An essential ingredient of any effective energy management program is the monitoring of actual energy use levels. These practices are expected to provide significant long-term benefits to institutions in maintaining efficient operations. Grantees will submit reports annually to the States. The States will summarize the reports submitted by the grantees and report the results to DOE in an annual report. Data and information contained in the reports prepared by the grantees will be collected and maintained on a monthly basis or for a period consistent with the billing cycle associated with the relevant fuel type. This reporting requirement will apply for three years or for the life of these programs, whichever is shorter.

Comments DOE Could Not Incorporate

DOE received many comments in response to the notice of proposed rulemaking which suggested revisions to the regulation which the Department was unable to incorporate in the final regulation. These comments included suggestions to: eliminate the matching funds requirement; fund energy conservation measures for units of local government and public care institutions; permit the funding of administrative buildings owned by local education agencies; alter or eliminate the requirement for conformity with the provisions of the Davis-Bacon Act; fund technical assistance programs and energy conservation measures commenced prior to November 9, 1978; eliminate the requirement that funds not obligated be reallocated in the next grant program cycle; and permit units of local government and public care institutions to qualify for hardship funding. Each of these comments proposes a revision to a specific requirement of NECPA. Thus, DOE could not and did not incorporate these comments in this regulation.

V. Additional Information

Environmental Assessment

DOE prepared an environmental assessment of the entire Title III NECPA programs. Notice of the public availability of that environmental assessment, together with the negative determination of environmental impact reached pursuant to an evaluation of the environmental assessment, was published in the Federal Register on March 12, 1979 (44 FR 13554). The negative determination concluded that the programs established by Title III of NECPA did not constitute major Federal actions significantly affecting the quality of the human environment pursuant to Section 102(2)(C) of the National Environmental Policy Act of 1969 (NEPA), as amended (42 U.S.C. 4321 *et seq.*). No material comments were received during the public comment period. Consequently, DOE has finalized, and will act in accordance with, that negative determination.

Regulatory Analysis and Effective Date

The proposed regulation was reviewed in accordance with Executive Order 12044, 43 FR 12661, and was determined to be a "significant regulation" likely to have a "major impact." The proposed regulation was also reviewed in accordance with OMB Circular A-116 and was determined to be a major policy and program initiative.

In consideration of the rapid depletion of the Nation's nonrenewable energy resources and the short-term statutory deadline for issuance of regulations implementing NECPA Title III programs, the Under Secretary of DOE has determined that it is contrary to the public interest to delay issuance of this regulation for preparation of a regulatory analysis and an urban and community impact analysis. However, DOE is in the process of preparing such analyses which will be made available for public review and comment within 90 days of the publication of this regulation. Based on the findings of these analyses and any comments received following public review, DOE may propose appropriate amendments to this regulation.

Also, for the reasons just noted, good cause exists to make this regulation effective upon publication, rather than 30 days thereafter as would otherwise be required under the Administrative Procedure Act. In consideration of the foregoing, Part 455 of Chapter II, Title 10 of the Code of Federal Regulations is amended by adding new Subparts C through I, as set forth below. This amendment shall be effective April 17, 1979.

Issued in Washington, D.C., April 6, 1979.

Omi G. Walden

Assistant Secretary, Conservation and Solar Applications, Department of Energy.

10 CFR Part 455 is amended by establishing new Subparts C, D, E, F, G, H and I as follows:

Subpart C—Technical Assistance Programs for Schools, Hospitals, Units of Local Government, and Public Care Institutions

Sec.
455.40 Purpose and scope
455.41 Eligibility.
455.42 Contents of program.

Subpart D—Energy Conservation Measures for Schools and Hospitals

455.50 Purpose and scope
455.51 Eligibility.
455.52 Contents of program.

Subpart E—Applicant Responsibilities

455.60 Grant application submittals
455.61 Applicant certifications.
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Authority: Title III of the National Energy Conservation Policy Act, Pub. L. 95-619, 92 Stat. 3206 et seq., which establishes Parts G and H of Title III of the Energy Policy and Conservation Act, Pub. L. 94-163, 42 U.S.C. 6321 et seq.; Section 365(e)(2), 42 U.S.C. 6325(e)(2), of the Energy Conservation and Production Act, Pub. L. 94-385, 42 U.S.C. 3801 et seq.; Department of Energy Organization Act, Pub. L. 95-91, 42 U.S.C. 7101 et seq.

Subpart C—Technical Assistance Programs for Schools, Hospitals, Units of Local Government, and Public Care Institutions

§ 455.40 Purpose and scope.

This subpart specifies what constitutes a technical assistance program eligible for financial assistance under this part, and sets forth the eligibility criteria for schools, hospitals, units of local government and public care institutions to receive grants for technical assistance to be performed in buildings owned by such institutions.

§ 455.41 Eligibility.

To be eligible to receive financial assistance for a technical assistance program, an applicant must—

(a) Be a school, hospital, unit of local government or public care institution, all as defined in § 455.2, or a coordinating agency representing a group of eligible institutions and which has been granted authority by the institutions to act in their behalf;

(b) Be located in a State which has an approved State Plan as described in Subpart H of this part;

(c) Have conducted an energy audit or its equivalent, as determined by the State in accordance with the State Plan, for the building for which financial assistance is to be requested, subsequent to the most recent construction, reconfiguration or utilization change which significantly modified energy use within the building;

(d) Give assurance that it has implemented all energy conservation maintenance and operating procedures identified as a result of the energy audit, or provide a satisfactory written justification for not implementing any specific maintenance and operating procedures so identified; and,

(e) Submit an application in accordance with the provisions of this part and the approved State Plan.

§ 455.42 Contents of program.

(a) A technical assistance program shall be conducted by a qualified technical assistance analyst, who shall consider all possible energy conservation measures for a building, including solar or other renewable resource measures. A technical assistance program shall include a detailed engineering analysis to identify the estimated costs of, and the energy and cost savings likely to be realized from, implementing each identified energy conservation maintenance and operating procedure. A technical assistance program shall also identify the estimated cost of, and the energy and cost savings likely to be realized from, acquiring and installing each energy conservation measure, including solar and other renewable resource measures, that indicate a significant potential for saving energy based upon the technical assistance analyst's initial consideration.

(b) At the conclusion of a technical assistance program, the technical assistance analyst shall prepare a final report which shall include—

(1) A description of building characteristics and energy data including—

(i) The results of the preliminary energy audit and energy audit (or its equivalent) of the building;

(ii) The operating characteristics of energy using systems; and

(iii) The estimated remaining useful life of the building;

(2) An analysis of the estimated energy consumption of the building, by fuel type (in total Btu's and Btu/sq. ft./yr), at optimum efficiency (assuming implementation of all energy conservation maintenance and operating procedures);

(3) An evaluation of the building's potential for solar conversion, particularly for water heating systems;

(4) A listing of any known local zoning ordinances and building codes which may restrict the installation of solar systems;

(5) A description and analysis of all recommendations, if any, for acquisition and installation of energy conservation measures, including solar and other renewable resource measures, setting forth—

(i) A description of each recommended energy conservation measure;

(ii) An estimate of the cost of design, acquisition and installation of each energy conservation measure;

(iii) An estimate of the useful life of each energy conservation measure;

(iv) An estimate of increases or decreases in maintenance and operating costs that would result from each energy conservation measure, if any;

(v) An estimate of the salvage value or disposal cost of each energy conservation measure at the end of its useful life, if any;

(vi) An estimate of the annual energy and energy cost savings (using current energy prices) expected from the acquisition and installation of each energy conservation measure. In calculating the potential energy cost savings of each recommended energy conservation measure, including solar or other renewable resource measure, technical assistance analysts shall—

(A) Assume that all energy savings obtained from energy conservation maintenance and operating procedures have been realized;

(B) Calculate the total energy and energy cost savings, by fuel type, expected to result from the acquisition and installation of all recommended energy conservation measures, taking into account the interaction among the various measures; and,

(C) Calculate that portion of the total energy and energy cost savings, as determined in (B) above, attributable to each individual energy conservation measure.

(vii) The simple payback period of each recommended energy conservation measure, taking into account the interactions among the various measures. The simple payback period is calculated by dividing the estimated total cost of the measure, as determined pursuant to § 455.42(b)(5)(ii), by the estimated annual cost saving accruing from the measure, as determined pursuant to § 455.42(b)(5)(vi). For the purposes of ranking applications, the simple payback period shall be calculated using the cost savings resulting from energy savings only, determined on the basis of current energy prices. The estimated cost of the measure shall be the total cost for design and other professional services (excluding costs of a technical assistance program), if any, and acquisition and installation costs. Other economic analyses, such as life-cycle costing, which consider all costs and cost savings, such as maintenance costs and/or savings, resulting from an energy conservation measure, are recommended, but not required, for use by the institution in its decision-making process;

(6) A listing of energy use and cost data for each fuel type used for the prior 12-month period.

(7) A signed and dated certification that the technical assistance program has been conducted in accordance with the requirements of this section and the grant application and that the data presented is accurate to the best of the technical assistance analyst's knowledge.

Subpart D—Energy Conservation Measures for Schools and Hospitals

§ 455.50 Purpose and scope.

This subpart specifies what constitutes an energy conservation measure that may receive financial assistance under this part and sets forth the eligibility criteria for schools and hospitals to receive grants for energy

conservation measures, including solar and other renewable resource measures.

§ 455.51 Eligibility.

(a) To be eligible to receive financial assistance for an energy conservation measure, including solar or other renewable resource measure, an applicant must—

(1) Be a school or hospital, or both as defined in § 455.2, or a coordinating agency which represents groups of eligible institutions and which has been granted authority by the institutions to act in their behalf;

(2) Be located in a State which has an approved State Plan as described in Subpart H of this part;

(3) Have completed a technical assistance program or its equivalent, as determined by the State in accordance with the State Plan, for the building for which financial assistance is to be requested, subsequent to the most recent construction, reconfiguration or utilization change to the building which significantly modified energy use within the building;

(4) Have implemented all energy conservation maintenance and operating procedures which are identified as the result of an energy audit and a technical assistance program, or have provided a satisfactory written justification for not implementing any specific maintenance and operating procedures so identified;

(5) Have no plan or intention at the time of application to close or otherwise dispose of the building for which financial assistance is to be requested within the simple payback period of any energy conservation measure recommended for that building; and

(6) Submit an application in accordance with the provisions of this part and the approved State Plan.

(b) To be eligible for financial assistance, the simple payback period of each energy conservation measure for which financial assistance is requested shall not be less than 1 year nor greater than 15 years, and the estimated useful life of the measure shall be greater than its simple payback period.

§ 455.52 Contents of program.

The programs to be funded under this part will be for the design, acquisition and installation of energy conservation measures to reduce energy consumption or measures to allow the use of solar or other alternative energy resources for schools and hospitals. Such measures include, but are not necessarily limited to—

(a) Insulation, which resists heat transfer from the mechanical systems to the surrounding space, for bare pipes, water heaters, hot water storage tanks, chilled water piping, ductwork and other uninsulated mechanical equipment carrying an above or below ambient temperature fluid;

(b) Roof insulation, which resists heat transfer through the roof;

(c) Ceiling insulation, installed either above or below the ceiling, which resists heat transfer through the ceiling;

(d) Wall insulation, which resists heat transfer through the wall;

(e) Floor insulation, which resists heat transfer through the floor;

(f) Storm windows, which are an additional window, normally installed to the exterior, but which may be installed to the interior of the primary or ordinary window, to increase resistance to heat transfer, and to decrease air infiltration through the window assembly;

(g) Storm doors, which are an extra door installed to the exterior of an exterior door, but also may be installed as part of the entrance vestibule, to decrease heat transfer and air infiltration through the building entrance ways;

(h) Multiglazed window or door systems, which are a single glass unit consisting of multiple layers of glass separated by a hermetically sealed air space, which provide greater resistance to heat transfer;

(i) Reduction in glass area (in other than south-facing glazing systems) through use of methods such as bricking and insulated panelling which decreases heat transfer and air infiltration;

(j) Heat absorbing or heat reflective glazed and coated window and door systems, which are specially treated, coated or laminated glazing systems to absorb or reflect solar heat;

(k) Caulking, which is placed in joints of buildings or window or door systems to prevent the passage of air and moisture through the building envelope;

(l) Weatherstripping, which consists of strips of flexible material placed over, under, or in movable joints of windows and doors to reduce the passage of air and moisture;

(m) Automatic energy control systems, such as mixed air temperature reset devices, cooling coil discharge temperature reset devices; hot deck temperature reset devices; economizer controls; enthalpy controls; night setback thermostats; time clocks to start/stop selected heating, ventilating and air conditioning systems, refrigeration equipment, hot water generators, and associated pumps and fans; thermostatic radiator valves, and central computer control systems, which adjust the supply of heating, cooling, and ventilation to meet space conditioning requirements;

(n) Equipment required to operate or convert to variable energy supply, including—

(1) Automatic ventilating systems to turnoff or vary the consumption of energy systems to deliver no more energy than required at any operating point;

(2) Constant volume air distribution systems altered to variable air flow systems by the addition of variable air flow boxes, fan volume control dampers and related climatic controls; or

(3) Water spray coils for adiabatic cooling during appropriate weather conditions;

(o) Passive solar systems, such as direct gain glazing systems, mass (trombe) wall systems, thermal pond systems, and thermosyphon systems, which utilize elements of the building to collect, store and distribute solar energy for heating and/or cooling, and in which heat flow is by natural means (conduction, convection, radiation or evaporation);

(p) Solar space heating or cooling systems, which consist of solar collectors, and associated thermal storage, heat exchangers, pumps, fans, controls, piping and ducting;

(q) solar electric generating systems, which consist of photovoltaic solar collectors and associated electric storage and controls, or concentrating solar collectors and generating equipment, or wind energy conversion systems,

(r) Solar domestic hot water heating systems, which consist of solar collectors, and associated thermal storage, heat exchangers, pumps, controls and piping, for systems such as domestic hot water, laundry, kitchen, and boiler water makeup;

(s) Furnace or utility plant modifications, which consist of the installation of equipment to achieve reduction in fuel consumption, or to convert to renewable energy sources or coal, including—

(1) Replacement burners, furnaces, boilers, or any combination thereof, which are designed to substantially reduce the amount of fuel consumed as a result of increased combustion efficiency;

(2) Electrical or mechanical furnace ignition systems which eliminate continuous energy use;

(3) Devices for modifying flue openings, such as dampers and heat exchangers, which increase the efficiency of the total heating systems;

(4) Automatic combustion control systems, which improve burner operating performance to reduce consumption of fuel during full- and part-load operation;

(5) Devices, such as turbulators and flow restrictors, for modifying the capacity of boilers or hot water units to reduce oversized equipment to a proper size (after the other building modifications) and to increase the full and part-load efficiency of the primary equipment; and

(6) Equipment required to convert oil-fired and gas-fired units to alternative energy sources, including coal;

(t) Lighting fixture modifications and associated rewiring, which reduce the watts per square foot required for illumination through use of such measures as lamp sources of higher efficiency, or use of non-uniform task lighting design. Lighting fixture modifications that increase the general illumination level of a facility shall not be eligible for funding unless the increase is necessary to conform to any applicable State or local building code;

(u) Energy recovery systems which reduce energy used in heating and cooling systems by—

(1) Direct recycling of uncontaminated air, which has been conditioned, to an adjacent area for heating, cooling or ventilation makeup air;

(2) Exhaust air heat recovery to preheat outside air supply with heat recovery devices such as rotary air wheels, plate heat exchangers, non-regenerative heat-pipe devices, and run-around loop systems; or

(3) Purifying with charcoal or other mediums and recycling exhaust air from toilet areas, dining rooms, and lounges, and other building areas;

(v) Cogeneration systems which produce steam, heat, or other forms of energy as well as electricity for use primarily within a building or complex of buildings and which meet such fuel efficiency requirements as may be prescribed or approved by DOE and which may be new heat recovery equipment added to existing electrical generation systems;

(w) Any otherwise eligible energy conservation measure that involves leased equipment, which will save a substantial amount of energy. Only the costs of installation and connection of such leased equipment are eligible for financial assistance under this program. For purposes of ranking, pursuant to § 455.71(b)(1), a building for which a leased measure has been proposed, the simple payback period shall be determined by dividing the total installation and connection costs by the result of subtracting the average annual recurring lease costs from the projected average annual energy cost saving;

(x) Any other measures an energy audit or a technical assistance report shows, to the satisfaction of the Secretary, will save a substantial amount of energy. Such measures must be specifically identified in the grant application, and a complete description of the measure, together with calculations and other technical data supporting the projected cost and energy savings must be included in the application.

Subpart E—Applicant Responsibilities

§ 455.60 Grant application submittals.

(a) Each eligible applicant desiring to receive financed assistance shall file an applicant in accordance with the provisions of this subpart and the approved State Plan of the State in which such building is located. The application, which may be amended in accordance with applicable State procedures at any time prior to the State's final determination thereon, shall be filed with the State energy agency designated in the State Plan.

(b) Applications from schools, hospitals, units of local government, public care institutions and coordinating agencies for financial assistance for technical assistance programs shall include—

(1) The applicant's name and mailing address;

(2) A written statement certifying that the applicant is eligible under § 455.41;

(3) The results of the preliminary energy audit and energy audit (or its equivalent) for each building for which financial assistance is requested;

(4) A project budget, by building, which stipulates the intended use of all Federal and non-Federal funds, and identifies the sources and amounts of non-Federal funds, including in-kind contributions (limited to the goods and services described in OMB Circular A–102, "Uniform Administrative Requirements for Grants-in-Aid to State and Local Governments", which are directly related to the project and do not include funds derived from revenue sharing or other Federal sources), to be used to meet the cost-sharing requirements described in Subpart G of this part;

(5) A brief description, by building, of the proposed technical assistance program, including a schedule, with appropriate milestone dates, for completing the technical assistance program; and

(6) Additional information required by the applicable State Plan, and any other information which the applicant desires to have considered, such as information to support an application from a school or hospital for financial assistance in excess of the 50 percent Federal share on the basis of severe hardship.

(c) Applications from schools or hospitals and coordinating agencies for financial assistance for energy conservation measures, including solar and other renewable resource measures, shall include—

(1) The applicant's name and mailing address;

(2) A written statement certifying that the applicant is eligible under § 455.51;

(3) Identification of each building pursuant to 10 CFR 450.42(a) (1) through (5) for which financial assistance is requested, including—

(i) Name or other identification of each building and its address;

(ii) Building category;

(iii) Description of functional use;

(iv) Ownership; and

(v) Size of building expressed in gross square feet.

(4) A project budget, by building, which stipulates the intended use of all Federal and non-Federal funds, and identifies the sources and amounts of non-Federal funds, including in-kind contributions (limited to the goods and services described in OMB Circular A–102, "Uniform Requirements for Grants-in-Aid to State and Local Governments", which are directly related to the project and do not include funds derived from revenue sharing or other Federal sources), to be used to meet the cost-sharing requirements described in Subpart G of this part;

(5) A schedule, including appropriate milestone dates, for the completion of the design, acquisition and installation of the proposed energy conservation measures for each building;

(6) A list, by building, of the specific energy conservation measures proposed for funding, indicating the cost of each measure, the estimated energy and energy cost savings of each measure, the projected simple payback period for each measure, computed in accordance with the methodology described in § 455.42(b)(5)(vii) or § 455.52(w), as the case may be, and the average simple payback period for all measures proposed for the building. The average simple payback period of all measures proposed shall be determined by dividing the total estimated cost by the total projected annual cost saving (from energy savings only);

(7) A technical assistance report, completed since the most recent

construction, reconfiguration or utilization change to the building which significantly modified energy use, for each building;

(8) If the applicant is aware of any adverse environmental impact which may arise from adoption of any energy conservation measure, an analysis of that impact and the applicant's plan to minimize or avoid such impact; and

(9) Additional information required by the applicable State Plan, and any additional information which the applicant desires to have considered, such as information to support an application for financial assistance in excess of the 50 percent Federal share on the basis of severe hardship.

(d) Financial assistance for units of local government and public care institutions will be provided only for buildings which are owned and primarily occupied by offices or agencies of a unit of local government or public care institution and which are not intended for seasonal use and not utilized primarily as a school or hospital eligible for assistance under this program.

(e) Financial assistance provided to a school which is a local education agency as defined in § 455.2 must not be used for a technical assistance program or acquisition or installation of any energy conservation measure in any building of such agency which is used principally for administration.

§ 455.61 Applicant Certifications.

Applications for financial assistance for technical assistance programs and energy conservation measures, including solar and other renewable resource measures, shall include a signed statement that the applicant—

(a) Has satisfied the requirements set forth in § 455.60;

(b) Will expend granted funds for the purpose stated in the application and in compliance with the requirements of this part and the applicable approved State Plan;

(c) Has implemented all energy conservation maintenance and operating procedures recommended as a result of the energy audit and, for applications for energy conservation measures, those recommended in the report obtained under a technical assistance program. If any such procedure has not been implemented, the application shall contain a satisfactory written justification for not implementing that procedure;

(d) Will obtain from the technical assistance analyst, before the analyst performs any work in connection with a technical assistance program or energy conservation measure, a signed statement certifying that the technical assistance analyst has no conflicting financial interests and is otherwise qualified to perform the duties of a technical assistance analyst in accordance with the standards and criteria established in the approved State Plan;

(e) Will not enter into any contract relating to an energy conservation measure, which requires or may require expenditure of more than $5,000 (excluding technical assistance costs), that does not conform to the provisions of the Davis-Bacon Act (40 U.S.C. section 276a to 276a–5) pertaining to minimum wages for construction in the applicant's locality; and

(f) Will comply with all reporting requirements contained in § 455.63.

§ 455.62 Grant Applications For State Administrative Expenses.

(a) Each State desiring to receive grants to help defray State administrative expenses shall file applications therefor in accordance with the provisions of this section. Each State may apply for an amount not exceeding 2 percent of its total allocation for technical assistance and energy conservation measures during the initial grant program cycle to the Secretary at any time after the State forwards its State Plan to the Secretary for approval; or, for subsequent grant program cycles, any time after notice by DOE of the amounts allocated to each State for that grant program cycle. In addition, each State after it makes the submittal to DOE required under § 455.72 may apply for a further grant not exceeding 5 percent of the total of all grant awards for technical assistance and energy conservation measures within that State in that grant program cycle, less any amounts previously awarded the State for administrative expenses in the same grant program cycle.

(b) Applications for financial assistance to defray State administrative expenses shall include—

(1) The name and address of the person designated by the State to be responsible for the State's functions under this part; and

(2) An itemized budget, which stipulates the intended use of all Federal and non-Federal funds, for only those State administrative expenses listed in § 455.83(b), and which identifies the sources and amounts of the required matching non-Federal funds, including in-kind contributions (limited to the goods and services described in OMB Circular A–102, "Uniform Requirements for Grants-in-aid to State and Local Governments", which are directly related to the project and do not include funds derived from revenue sharing or other Federal sources), to be used to meet the cost-sharing requirements described in Subpart G of this part.

§ 455.63 Grantee Records and Reports.

(a) Each State, school, hospital, unit of local government, public care institution and coordinating agency which receives a grant for a technical assistance program, energy conservation measure, including solar and other renewable resource measure, or State administrative expenses shall keep all the records required by § 455.4.

(b) By the end of January and July of each year each grantee shall, until the grantee's program has been concluded, submit a report to the State which shall detail and discuss—

(1) Milestones accomplished, those not accomplished, status of in-progress activities, problems encountered, and remedial actions, if any, planned; and

(2) Financial status reports completed in accordance with the documents listed in § 455.3. Financial status reports must be submitted simultaneously to both the State and the Secretary.

(c) Within 90 days of concluding a technical assistance program or installation of funded energy conservation measures, including solar and other renewable resource measures, the grantee shall submit a final report to the State and a summary thereof to the Secretary which shall detail and discuss, as applicable—

(1) A summary of all work accomplished;

(2) Problems encountered;

(3) Final financial reports completed in accordance with the documents listed in § 455.3.

(4) For a completed technical assistance program—

(i) The technical assistance report; and

(ii) A recommended plan to implement energy conservation maintenance and operating procedures, and plans to acquire and install energy conservation measures, including solar and other renewable resource measures;

(5) For completed energy conservation measures including solar and other renewable resource measures—

(i) A listing and description of energy conservation measures acquired and installed;

(ii) A final projected simple payback period, computed in accordance with § 455.42, for each building specifying and utilizing the actual costs for each measure and all the measures, taken as a whole; and

(iii) A statement that the completed modifications (material, equipment and installation) conform to the report on the technical assistance program and the approved grant application.

(d) Grantees shall keep all records required by this section for a minimum of three years after completion of the technical assistance program or energy conservation measure for which the grant was awarded.

(e) Grantees shall submit annual reports to the State covering each year of the three-year period following installation of an energy conservation measure or measures, or for the life of the program, whichever is shorter. Such annual reports shall identify each building and shall provide data on the actual energy use of that building for the preceeding 12-month period. Energy use shall be presented on a monthly or quarterly, as well as an annual basis, consistent with the energy billing cycle for the building. Annual reports shall be submitted within 60 days of the close of each 12-month period.

Subpart F—State Responsibilities

§ 455.70 State Evaluation of Grant Applications.

(a) If an application received by a State is reviewed and evaluated by that State and determined to be in compliance with Subparts C, D and E of this part, § 455.70(b), any additional requirements of the approved State Plan, State environmental laws, and other applicable laws and regulations, then such application will be eligible for financial assistance.

(b) Concurrently with its evaluation and ranking of grant applications pursuant to § 455.71, the State will forward each application for a school or hospital to the State school facilities agency or the State hospital facilities agency, as the case may be, for review and certification that each school application is consistent with related State programs for educational facilities, and each hospital application is consistent with State health plans under sections 1524(c)(2) and 1603 of the Public Health Service Act (42 U.S.C. 300m-3 and 300o-2, respectively), and that each has been coordinated through the review mechanisms under section 1523 of the Public Health Service Act (42 U.S.C. 300m-2) and section 1122 of the Social Security Act. No application from a school or hospital shall be eligible for funding until such certification has been issued.

§ 455.71 State Ranking of Grant Applications.

All eligible applications received by the State will be ranked by the State on an individual building-by-building basis.

(a) For technical assistance programs, buildings shall be ranked in descending priority based upon the energy conservation potential of the building as determined from an energy audit (or its equivalent) in accordance with the procedures established in the State Plan and one or more of the methods indicated in 10 CFR 450.43(c). In the case of buildings having equivalent energy conservation potential, preference shall be given to those buildings which have completed an energy audit without the use of Federal funds.

(1) Each State shall develop separate rankings for all buildings covered by eligible applications for—

(i) Technical assistance programs for units of local governments and public care institutions, and

(ii) Technical assistance programs for schools and hospitals.

(2) Within each ranking for technical assistance, a State shall indicate the amount of financial assistance requested by the applicant for each eligible building and, for those buildings with the highest ranking within the limits of the State's allocation, the amount recommended for funding. If the amount recommended is less than the amount requested by the applicant, the list shall also indicate the reason for that recommendation.

(b) For energy conservation measures, including solar or other renewable energy resource, buildings shall be ranked in descending priority. Several buildings may be ranked as a single building if the application proposes a single energy conservation measure which directly involves all of the buildings. States shall indicate the amount of financial assistance requested by the applicant for each eligible building and, for those buildings with the highest ranking within the limits of the State's allocation, the amount recommended for funding. If the amount recommended is less than the amount requested by the applicant, the list shall also indicate the reason for that recommendation. Buildings shall be ranked in accordance with the procedures established by the State Plan, on the basis of the information developed during a technical assistance program (or its equivalent) for the building and the criteria for ranking applications, which are listed below in the descending order in which weights for each criterion are to be applied by the State—

(1) The average simple payback period of all energy conservation measures proposed for the building, determined by dividing the total estimated cost by the total projected annual energy cost savings;

(2) The type(s) of energy source(s) to which conversion is proposed (with weighting adjustments directly proportional to the ratio of the annual energy cost savings of the conversion measure to the total annual energy cost savings of all measures proposed for a given building), including in descending priority—

(i) Renewable; and

(ii) Coal;

(3) The type(s) and quantity(s) of energy to be saved (with weighting adjustments directly proportional to the ratio of the annual energy savings of each measure to the total annual energy savings of all measures proposed for a given building), including, in descending priority—

(i) Oil;

(ii) Natural gas; and

(iii) Electricity;

(4) Climate within the State; and

(5) Other factors as determined by the State.

(c) Within the rankings of school and hospital buildings for technical assistance and energy conservation measures, including solar or other renewable resource measures, a State shall assure that—

(1) Schools receive not more than 70 percent of the total funds allocated for schools and hospitals to the State in any grant program cycle; and

(2) Hospitals receive not more than 70 percent of the total funds allocated for schools and hospitals to the State in any grant program cycle.

(d) To the extent provided in § 455.82(c), additional financial assistance will be available for schools and hospitals experiencing severe hardship based upon an applicant's long-term need or inability to provide the 50 percent non-Federal share. This additional financial assistance will be available only to the extent necessary to enable such institutions to participate in the program.

(1) Funding for this additional financial assistance will be taken from the funds reserved for grants in excess of 50 percent of the total costs of the technical assistance programs and energy conservation measures.

(2) Applications for Federal funding in excess of 50 percent based on claims of severe hardship shall be given an additional evaluation by the State to assess on a quantifiable basis, to the maximum extent practicable, the

relative need among eligible institutions. The minimum amount of additional Federal funding necessary for the applicant to participate in the program will be determined by the State in accordance with the procedures established in the State Plan and will be based upon one or more of the following—

(i) The ratio of the cost of the proposed technical assistance programs or energy conservation measures to the institution's total annual budget;

(ii) The borrowing capacity of the institution;

(iii) The average unemployment rate for the institution's locality at the time the application is submitted;

(iv) The ratio of the amount expended annually by the institution for energy to the institution's total annual operating budget;

(v) The median annual family income of the institution's locality; and

(vi) Other special conditions of the institution or its locality as determined by the State.

(3) A State shall indicate, for those schools and hospitals with the highest rankings, determined pursuant to paragraphs (a) and (b) of this section—

(i) The amount of additional hardship funding requested by each eligible applicant for each building determined to be in a class of severe hardship, and

(ii) The amount of hardship funding recommended by the State based upon relative need as determined in accordance with the State Plan, to the limit of the hardship funds available.

(e) A State is exempt from the ranking requirements of this section when—

(1) The total amount requested by all applications for schools and hospitals for technical assistance and energy conservation measures in a given grant program cycle for grants up to 50 percent is less than or equal to the funds available to the State for such grants and the total amount recommended for hardship funding is less than or equal to the amounts available to the State for such grants.

(2) The total amount requested by all applications for buildings owned by units of local government and public care institutions in a given grant program cycle is less than or equal to the total amount allocated to the State for technical assistance program grants in the State.

§ 455.72 Forwarding of Applications.

Each State shall forward to the Secretary once each grant program cycle each listing of buildings covered by eligible applications for schools and hospitals or for units of local government and public care institutions, and ranked by the State pursuant to the provisions of § 455.71.

§ 455.73 State Duties.

(a) Each State shall be responsible for—

(1) Consulting with eligible institutions and coordinating agencies representing such institutions in the development of its State Plan;

(2) Notifying eligible institutions and coordinating agencies of the content of the approved State Plan;

(3) Notifying each applicant, prior to submittal of applications to the Secretary, how the applicant's building ranked among other similar buildings, and whether and to what extent its application will be recommended for funding or, if not to be recommended for funding, the reason therefore;

(4) Certifying that each institution that has submitted an application to be recommended for funding has given its assurance that it is willing and able to participate on the basis of the amounts recommended for that institution in the State ranking pursuant to § 455.71; and

(5) Direct program oversight, monitoring and financial auditing of the activities for which grants are awarded to its institutions to insure compliance with all legal requirements. States shall immediately notify the Secretary of any non-compliance or indication thereof.

(b) Each State shall submit a report to the Secretary, by the close of each February and August following State Plan approval for the duration of the grant program, providing—

(1) A narrative of the program, including objectives accomplished, problems encountered and recommended solutions;

(2) A detailed report on program related financial expenditures by all grantees and by the State;

(3) A summary of the most recent reports received by the State pursuant to § 455.63; and

(4) Such other information as the Secretary may, from time to time, request.

(c) Each State shall include in the August report required by paragraph (b) of this section, an estimate of annual energy use reductions in the State, by energy source, attributable to implementation of energy conservation maintenance and operating procedures and installation of energy conservation measures under this program. Such estimates shall be based upon a sampling of institutions participating in the technical assistance phase of this program and upon the reports submitted to the State pursuant to § 455.63(e).

Subpart G—Grant Awards

§ 455.80 Approval of Grant Applications.

(a) The Secretary shall review and approve applications submitted by a State in accordance with § 455.72 if the Secretary determines that the applications meet the objectives of the Act, and comply with the applicable State Plan and the requirements of this part. The Secretary may disapprove all or any portion of an application to the extent that funds are not available to carry out a program or measure (or portion thereof) contained in the application, or for such other reason as the Secretary may deem appropriate.

(b) The Secretary shall notify a State and the applicant of the final approval or disapproval of an application at the earliest practicable date after the Secretary's receipt of the application, and, in the event of disapproval, shall include a statement of the reasons therefor. An application which has been disapproved may be amended and resubmitted in the same manner as the original application at any time within a grant program cycle.

(c) The Secretary shall award only one grant to an applicant for any single technical assistance program or energy conservation measure for any one building. Financial assistance under this part for any single technical assistance program or energy conservation measure shall not exceed the amount of the initial grant award.

§ 455.81 Grant Awards For Units of Local Government and Public Care Institutions.

(a) The Secretary may make grants to units of local governments, public care institutions and coordinating agencies for up to 50 percent of the costs of performing technical assistance programs for buildings covered by an application approved in accordance with § 455.80.

(b) Total grant awards within any State to units of local government and public care institutions are limited to the funds allocated to each State in accordance with Subpart I of this part.

(c) No grant awarded under this section for a technical assistance program shall include funding for the purchase of any single item of equipment or personal property having an acquisition cost in excess of $500.

§ 455.82 Grant Awards For Schools and Hospitals.

(a) The Secretary may make grants to schools, hospitals and coordinating agencies for up to 50 percent of the cost of performing technical assistance programs for buildings covered by an

application approved in accordance with § 455.80. Grant awards for technical assistance programs in any State within any grant program cycle shall not exceed—

(1) 30 percent of the amount allocated to a given State from the 1978 fiscal year appropriation for technical assistance programs and energy conservation measures for schools and hospitals;

(2) 15 percent of the amount allocated to a given State from the 1979 fiscal year appropriation for technical assistance programs and energy conservation measures for schools and hospitals;

(3) 5 percent of the 1980 fiscal year appropriation for technical assistance programs and energy conservation measures for schools and hospitals.

(b) The Secretary may make grants to schools, hospitals and coordinating agencies for up to 50 percent of the costs of acquiring and installing energy conservation measures, including solar and other renewable resource measures, for buildings covered by an application approved in accordance with § 455.80.

(c) The Secretary may award 10 percent of the total amount allocated to a State for schools and hospitals for technical assistance programs and energy conservation measures in a given grant program cycle to cover more than 50 percent, but not to exceed 90 percent, of the cost of a technical assistance program or an energy conservation measure. These additional amounts may be awarded to applicants in a class of severe hardship, ascertained by the State in accordance with the State Plan, for buildings recommended by the State pursuant to § 455.71(d)[3], and in amounts determined pursuant to § 455.71(d)[2].

(d) The Secretary shall not award more than 70 percent of the total amount allocated to a State for technical assistance programs and energy conservation measures in a given grant program cycle to either schools or hospitals in that State.

(e) No grant awarded under this section for a technical assistance program shall include funding for the purchase of any single item of equipment or other personal property having an acquisition cost in excess of $500.

(f) Applicant expenditures for a technical assistance program commenced after November 8, 1978 for a building may be wholly or partially classified in the discretion of the Secretary as matching non-Federal funds for the purposes of matching grants awarded for energy conservation measures.

§ 455.83 Grant Awards For State Administrative Expenses.

(a) For the purpose of defraying State expenses in the administration of technical assistance programs and energy conservation measures, the Secretary may make grant awards to a State—

(1) Immediately following approval of the State Plan, or for subsequent grant program cycles, immediately following public notice of the amounts allocated to a State for the grant program cycle, and upon approval of the grant application for administrative costs, in an amount not exceeding 2 percent of that State's total allocation for a given grant program cycle for technical assistance and energy conservation measures. Grants for such purposes may be made for up to 50 percent of a State's projected administrative expenses, as approved by the Secretary; and

(2) Concurrently with grant awards for approved applications for technical assistance or energy conservation measures for institutions in that State, and upon approval of an application for administrative costs, in an amount not exceeding the difference between the amount granted pursuant to subparagraph (1) of this paragraph and 5 percent of the total amount of grants awarded within the State for technical assistance programs and energy conservation measures in the applicable grant program cycle. Grants for such purposes may be made for up to 50 percent of a State's projected administrative expenses, as approved by the Secretary. The total of all grants for State administrative costs, technical assistance programs and energy conservation measures in that State shall not exceed the total amount allocated for that State for any grant program cycle.

(b) A State's administrative expenses shall be limited to those directly related to administration of technical assistance programs and energy conservation measures including costs associated with—

(1) Personnel, whose time is expended directly in support of such administration;

(2) Supplies, and services, expended directly in support of such administration;

(3) Equipment purchased or acquired solely for, and utilized directly in support of such administration: *Provided*, That no single item of equipment or other personal property costing more than $300 shall be acquired without the express consent of DOE;

(4) Printing, directly in support of such administration; and

(5) Travel, directly related to such administration.

Subpart H—State Plan Development and Approval

§ 455.90 Contents of State Plan.

Each State shall develop a State Plan for technical assistance programs and energy conservation measures, including solar and other renewable resource measures. The State Plan shall be reviewed and approved by State energy agency. The State Plan shall include—

(a) A statement setting forth the procedures by which the views of eligible institutions or coordinating agencies representing such institutions, or both, were solicited and considered during development of the State Plan;

(b) The procedures the State will follow to notify eligible institutions and coordinating agencies of the content of the approved State Plan;

(c) The procedures for submittal of grant applications to the State;

(d) A description and evaluation of the results of preliminary energy audits (described in Subpart B of this part) which have been conducted in the State including, but not limited to—

(1) In the case of a State which has completed preliminary energy audits of all potentially eligible buildings, a summary of the data gathered pursuant to § 450.42 for all such buildings;

(2) In the case of a State which has completed preliminary energy audits of a sample of all potentially eligible buildings within the State—

(i) Reasonably accurate estimates of the preliminary energy audit data required by 10 CFR 450.42 for all potentially eligible buildings within the State; and

(ii) A plan which describes further actions to be taken to complete preliminary energy audits of all potentially eligible buildings;

(e) The procedures to be used by the State for evaluating and ranking technical assistance and energy conservation measure grant applications pursuant to § 455.71, including the weights assigned to each criterion set forth in § 455.71(b);

(f) The procedures that the State will follow to insure that funds will be allocated equitably among eligible applicants within the State, including procedures to insure that funds will not be allocated on the basis of size or type of institution but rather on the basis of relative need taking into account such factors as cost, energy consumption and energy savings, in accordance with § 445.71;

(g) The procedures that the States will follow for identifying schools and hospitals experiencing severe hardship and for apportioning the funds that are available for schools and hospitals in a class of severe hardship. Such policies and procedures shall be in accordance with § 455.71(d);

(h) A statement setting forth the extent to which, and by which methods, the State will encourage utilization of solar space heating, cooling and electric systems and solar water heating systems;

(i) The procedures to assure that all financial assistance under this part will be expended in compliance with the requirements of the State Plan, in compliance with the requirements of this part, and in coordination with other State and Federal energy conservation programs;

(j) The procedures to insure implementation and continued use of energy conservation maintenance and operating procedures in those buildings for which financial assistance is awarded under this part;

(k) The procedures designed to insure that financial assistance under this part will be used to supplement, and not to supplant, State, local or other funds;

(l) The procedures for determining that energy audits performed without the use of Federal funds have been performed in substantial compliance with the requirements of 10 CFR Part 450 for the purposes of satisfying the eligibility requirements contained in § 455.41(c);

(m) The procedures for establishment of, and adherence to, milestones for accomplishment of technical assistance programs and energy conservation measures receiving financial assistance under this part;

(n) The procedures for determining that technical assistance programs performed without the use of Federal funds have been performed in compliance with the requirements of § 455.42, for the purposes of satisfying the eligibility requirements contained in § 455.51(a)(3).

(o) The procedures for State management, financial audit, monitoring and evaluation of technical assistance programs and energy conservation measures receiving financial assistance under this part;

(p) A description of the State's program for establishing and insuring compliance with qualifications for technical assistance analysts. Such policies shall require that technical assistance analysts—

(1) Have experience in energy conservation and be a registered professional engineer licensed under the regulatory authority of the State;

(2) Be an architect-engineer team, the principal members of which are licensed under the regulatory authority of the State; or

(3) Be otherwise qualified in accordance with such criteria as the State may prescribe in its State Plan to insure that individuals conducting technical assistance programs possess the appropriate training and experience in building energy systems. Such policies shall also require that technical assistance analysts be free from financial interests which may conflict with the proper performance of their duties; and

(q) The procedures for apportionment of funds among eligible institutions within the State. As a minimum, such policies and procedures shall assure a separate priority ranking pursuant to the provisions of § 455.71 for each building covered by an application approved pursuant to the provisions of § 455.70 for—

(1) Technical assistance programs for units of local government and public care institutions;

(2) Technical assistance programs for schools and hospitals; and

(3) Energy conservation measures, including solar and other renewable resource measures, for schools and hospitals.

§ 455.91 Submission and Approval of State Plans.

(a) Proposed State Plans shall be submitted to the Secretary within 120 days of the effective date of this subpart unless the Secretary, upon request and for good cause shown, grants an extension of time.

(b) The Secretary shall, within 60 days of receipt of a proposed State Plan, review each Plan and, if it is found to conform to the requirements of this part, approve the State Plan. If the Secretary does not disapprove a State Plan within the 60-day period, the Secretary will be deemed to have approved the State Plan.

(c) If the Secretary determines that a proposed State Plan fails to comply with the requirements of this part, the Secretary shall return the Plan to the State with a statement setting forth the reasons for disapproval. With the written consent of the Secretary, the State may submit a new or amended Plan at any time.

§ 455.92 State Plans Developed by the Secretary.

(a) If a State Plan has not been approved by February 7, 1981, or within 90 days after completion of the preliminary energy audits, whichever is later, the Secretary may develop and implement a State Plan on behalf of the schools and hospitals in the State.

(b) Subsequent to the development of a State Plan by the Secretary, the State may submit its own State Plan and the Secretary shall approve or disapprove such plan within 60 days after receipt by the Secretary. If the proposed plan meets the requirements of this part, and is not inconsistent with any plan developed and implemented by the Secretary, the Secretary shall approve the State Plan which shall automatically replace the Plan developed by the Secretary.

Subpart I—Allocation of Appropriations Among the States.

§ 455.100 Allocation of Funds.

(a) The Secretary will allocate available funds among the States for the purpose of awarding grants to schools, hospitals, units of local government, and public care institutions and coordinating agencies to implement technical assistance and energy conservation measures grant programs in accordance with this part.

(b) By notice published in the Federal Register, the Secretary shall notify each State of the total amount allocated for grants within the State for any grant program cycle.

(c) By notice published in the Federal Register, the Secretary shall notify each State of the period for which funds allocated for a grant program cycle will be reserved for grants within the State.

(d) Each State shall apportion ten percent of its allocation for schools and hospitals in each grant program cycle to provide additional financial assistance, in excess of the 50 percent Federal share but not to exceed 90 percent, for technical assistance programs and energy conservation measures for schools and hospitals determined to be in a class of severe hardship. Such determinations shall be made in accordance with § 455.71(d).

§ 455.101 Allocation Formulas.

(a) Financial assistance for conducting technical assistance programs for units of local government and public care institutions shall be allocated among the States by multiplying the sum available by the allocation factor set forth in paragraph (c) of this section.

(b) Financial assistance for conducting technical assistance programs and acquiring and installing energy conservation measures, including solar and other renewable resource

measures, for schools and hospitals shall be allocated among the States by multiplying the sum available by the allocation factor set forth in paragraph (c) of this section.

(c) The allocation factor (K) shall be determined by the formula—

$$K = \frac{0.07}{n} + 0.1\ \frac{(Sfc)}{(Nfc)} + 0.83\ \frac{(SP)\,(SC)}{(NPC)}$$

where, as determined by DOE—

(1) Sfc is the average retail cost per million Btu's of energy consumed within the region in which the State is located, as reflected in the 1985, Series C projections prepared for DOE's Energy Information Administration Administrator's Annual Report, 1977;

(2) Nfc is $271.95, the summation of the Sfc numerators for all States;

(3) n is the total number of eligible States;

(4) SP is the population of the State, as determined from 1976 census estimates, "Current Population Reports", Series P–25, number 603;

(5) SC is the sum of the State's heating and cooling degree days, as determined from National Oceanic and Atmospheric Administration data for the thirty year period, 1941 through 1970;

(6) NPC is 1,277,259,000, the summation of the (SP) (SC) numerators for all States.

(d) Except for the District of Columbia, Puerto Rico, Guam, American Samoa and the Virgin Islands, no allocation available to any State may be less than 0.5 percent of all amounts allocated in any grant program cycle. No State will be allocated more than 10 percent of the funds allocated in any grant program cycle.

§ 455.102 Reallocation of Funds

(a) If a State Plan has not been approved and implemented by a State by the close of the period for which allocated funds are available as set forth in the notice issued by the Secretary pursuant to § 455.100(d), funds allocated to that State for technical assistance and energy conservation measures will be reallocated among all States for the next grant program cycle, if available.

(b) If a State Plan has not been approved by February 7, 1981, or within ninety days after completion of the preliminary energy audits, whichever is later, the Secretary may develop and implement a State Plan on behalf of the schools and hospitals within the State. If the Secretary does not develop a State Plan for a State, the funds reserved for that grant program cycle for schools and hospitals in that State will be reallocated for the next grant program cycle among all States for schools and hospitals.

(c) If a State does not forward a sufficient number of grant applications to award all the funds allocated for the State in any grant program cycle, the Secretary shall reallocate the funds which remain available among all States for the next grant program cycle.

(d) If a State does not forward a sufficient number of grant applications under the severe hardship provisions set forth in § 455.71(d) to award 10 percent of all of the funds allocated to the State for schools and hospitals in that grant program cycle, the Secretary shall reallocate the remaining hardship funds among all States for the next grant program cycle.

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